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TWO DEPTH SEMINARS ON CURRENT STATUS, CONTINUOUS CENSUS, AND PROJECTED USES OF TELEVISION IN EDUCATION FOR THE NEXT DECADE.

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Report of

TWO DEPTH SEMINARS ON CURRENT STATUS, CONTINUOUS CENSUS, AND PROJECTED USES OF TELEVISION IN EDUCATION FOR THE NEXT DECADE.

U. S. Office of Education Contract No. OE-3-16-033

Submitted by

Subcommittee on Television of
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FOREWORD

The North Central Association of Colleges and Secondary Schools (NCA) concentrates its attention and effort on the attainment and maintenance of high standards of education in some 4,100 member institutions in a 19-state area.[1] The NCA Commissions on Secondary Schools and Colleges and Universities examine institutions for accreditation and counsel administrators. The Commission on Research and Service develops and reports information useful to educational institutions in their search for quality.

Since 1953, NCA has formally recognized the importance of educational television and created the Committee on Television (now the Subcommittee on Television of the Commission on Research and Service). It was the Committee's task:

> . . . to inquire into the status of television in education and, from time to time, bring to the attention of member institutions pertinent information in this regard.[2]

A series of status studies, seminars, and publications resulted, culminating in 1961-62 with eight dissemination conferences in five individual states and three regions. These conferences involved representatives from other regional accrediting agencies across the nation as well as NCA member institutions.

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[1] Including 3,628 secondary schools, 478 colleges and universities in the states of: Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, West Virginia, Wisconsin and Wyoming.

[2] Minutes, NCA Executive Committee, June 26-27, 1953.

From 1963 through 1965, the Subcommittee engaged in a new endeavor, approved by the United States Commissioner of Education under provisions of Title VII, Part B of the National Defense Education Act of 1958. The project called for two depth seminars. The first was to establish a benchmark appraising the current status of the uses of television in education after more than a decade of development, and to develop procedures for a continuous census of educational television activity over the region. The second was to project the uses of television in education for the next decade.

As a result of the first seminar, when it was discovered that no valid or standard "framework of costs" involving fiscal policy, administrative practice, and accounting procedures existed, the contract was amended in order that the Subcommittee could further investigate this problem. The objective was to develop, in draft form, a costing model applicable in the analysis of various instructional/educational television situations and as the basis for a standardized set of accounting procedures. This endeavor, rewarding as it was, almost achieved the dimension of a new project. Likewise, the continuing census proved to be a more complex undertaking than initially anticipated, with the resultant need to develop two sets of procedures and the model for a third. The third instrument will lend itself to more rapid data processing.

The accumulation of research data, demonstrations and experiments in educational television had already become so extensive by 1958 that it had become difficult, if not impossible, for a college or school administrator to establish for himself a valid set of working principles. It was this situation which led the Subcommittee to undertake its first depth seminar in 1959 on: The Uses of Television in Education.

By 1963, the problem had grown even more complex and the need for new educational administrative guidelines in the employment of television and related media was recognized. It appeared that useful answers could not be readily achieved by experimental methods or statistical analysis, but rather through a thematic review of problems by panels of experts who were believed to be most knowledgeable in this field. Therefore, seminars and related conference sessions were arranged. The information thus received underwent successive reviews by the Subcommittee acting as a panel of judges, aided enormously by the skillful and penetrating editorial handling of the data by James R. Jordan; the advice and counsel of many school and university administrators, especially those engaged in institutional studies relating to cost; and the careful supporting work of project staff. Without these contributions, the Subcommittee's task would not have been accomplished.

The Subcommittee, many of whose members have served for a decade or more, and each of whom has knowledge and experience in his own right in this particular area of concern, at this point found it difficult, if not impossible, to separate the information obtained at a particular seminar or conference in this project from all of the related information it has been privileged to collect over the years. As a result, the conclusions and recommendations which follow, in all probability, represent not only the concepts derived from this immediate project but reflect the accumulated experience of the Subcommittee itself.

The Subcommittee feels deeply indebted to and grateful for the continuing confidence and financial support it has received from the United States Office of Education. It sincerely hopes the continuing endeavors which USOE helped make possible will be of benefit to school and college administrators in the years ahead.

Richard B. Hull, Chairman
Subcommittee on Television
Commission on Research and Service
North Central Association of
Colleges and Secondary Schools

PART I

THE CURRENT STATUS OF THE USES OF TELEVISION IN EDUCATION

ETV Benchmarks--'64:
The Implementation of Television in Education

INTRODUCTION

W9XK, University of Iowa, using the scanning disc for transmission of the picture, with simulcast over radio station WSUI, began systematic televised instruction in 1931. In early 1932, the first black and white, 35-line, television picture blinked and wavered across a little screen in a laboratory at Purdue University. By the end of 1939, experimental television stations at Purdue and the University of Iowa had spewed out picture making signals in several hundred telecasts, and reception was reported as far away as one thousand miles.

In 1940, Purdue engineers reported the purification of germanium presaging the development and use of semi-conductors and the birth of the transistor. The swift technological developments demanded by military necessity in World War II hastened the evolvement of television.

Then, in the post-war years, colleges and universities were in the front line of broadcast television. Iowa State University, operating a commercially licensed station, contributed greatly to the application of the new sight and sound instrument to educational communication. Education was no stranger to television from its very beginnings.

But, the new instrument provided a window through which the wares of the world might be attractively displayed. So commercially potent was the instrument that the necessarily large capital and operating investments could be justified. The viewers came to know the instrument more for the commercial fare it presented than for the communicative power it possessed for the enlightenment and advancement of a total society from the tiniest pre-school tot to the oldest among us.

Without the aid of profit dollars to offset the investment, but with a promise of gain far exceeding the dollars of commercial communication, pioneers of education worked at applying the instrument to educational communication. They waged a winning war to persuade the Federal Communications Commission that the society would be served best by the reservation of a substantial part of the television broadcast spectrum exclusively for educational purposes.

The direct beneficiaries of this relatively quiet but struggling effort to use and demonstrate the powers of television in education already number in the tens of millions. Many generations yet to be born will be added to these. But, despite a steady growth, the sifting of advancing knowledge and technology about television into the educational processes of the schools and colleges of the nation has been far slower than the proven potentials of the instrument would warrant.

Reasons abound by which this reluctance to embrace a new, expensive, and highly technical device can be explained. Doubtless, there are many analogies in the history of our technological society in which the resistance to change, or a threat to vested notions, has delayed capitalizing on the obvious. In the case of education, the firmly implanted conventional concept of a teacher in front of a small class of eager students has resisted the injection of a new communication device. Certainly of great influence has been our traditional devotion to the decentralized control and decision-making power over our schools and educational institutions, a tradition we treasure with appropriate reverence.

Now, however, the evidence is in. All the evidence needed is available to the leaders of our schools, colleges and universities with which they can help themselves and others to understandings and intelligent conclusions about the use of television for education.

Educational television is no longer a pioneering venture. The main trails have been blazed and trodden into highways to be traveled with safety and assurance by those desiring to reach the educational destinations of improved instruction and quality instruction for many new numbers of students. But, who is to travel this road? No teacher can travel it alone. No principal can very well acquire the vehicle just for his school, and few superintendents or college presidents can move a school system or institution into the economic commitment without the concurrence of those who establish policy.

It is true that the television teacher gives to television the educational message to be conveyed. It is also true that the teacher's genius ultimately determines the communicative impact of the message. Still, the television instrument requires a leadership and an institutional commitment before the opportunity can be available through which the inspiration of the teacher can be enlarged and made available to many beyond his personal presence.

Whose job is it, then, to implement the installation and intelligent use of this new dimension in education? Whose job is it to assure a careful assessment of the powers of television as they might be applied to the specific problems of his school system or his college or university? The teacher, yes; the superintendent or president, definitely; and, as well, the school board member, the trüstee or regent to whom falls the ultimate responsibility for educational opportunity and the quality of that opportunity.

Who, then, should read this material? Who should be urged to know the benchmarks of educational television in 1964?

Whoever you are, whatever your responsibility for education in this land--a parent, a taxpayer, a school board member, a trustee of a college, a university regent, a superintendent of schools, a principal, a supervisor, a professor, a teacher--that which follows deserves your attention, your interest and your careful consideration.

WHAT CAN TV DO FOR PROBLEMS CONFRONTING EDUCATION?

The Numbers Problem?

As Commissioner W. W. Waymack once characterized the Atomic Energy Commission's task, education has been "riding the bicycle while building it," for almost two decades.

Any superintendent, school board member, teacher, college or university president, grade or high school principal who served during the years since World War II can speak to the problem of vastly increased numbers of students. Despite the educators' own misgivings and the haranguing of the noisy critics, the educators may accept the credit for having kept faith with the new numbers.

What was done was accomplished for the most part with conventional tools in the conventional way and almost always with too few trained minds and hands to use the tools. There was not much time for studied innovation, and the stop-gap measure had to do. Much that was accomplished was done against the resistance of taxpayer groups, uninformed but concerned parents, reluctant legislators, and those within the ranks of the administrators and teachers who feared change more than they feared the consequences of a failure to keep faith with this suddenly huge, new generation.

The educators and the citizenry can take considerable pride in the tens of thousands of new classrooms they've built; the consolidations and reorganizations of systems' the expanded colleges and universities and multiplied opportunities for adult learning. But take no solace. The leading edge of the wave has now moved through childhood and adolescence, elementary and secondary schools, and an increasingly higher percentage of them are about to deluge the campuses of higher education.

Not until mid-1961 did the birth rate, which had grown at an increasing pace for almost 15 years, hesitate and level off. This occurred just two or three years before the leading edge of the population wave begins the formation of its new families. There is little to indicate that these many new families will not more than replace themselves in an affluent nation and, hopefully, a peaceful world.

The city superintendent needs no reminders that the numbers have also taken to moving about. They tend to congregate in larger population centers. They move about within the cities as well as on the fringes. The educators in the suburbs, in the small cities and in the towns and the rural areas have little difficulty recognizing the impact of shifting populations. They also see increasing costs, the wailing of the property owners, and the squeeze upon state tax revenues for supplemental aid. There is little the college or university president doesn't know about all this. He has sought for a decade and more to obtain support from both public and private sources to simply prepare for that which could be seen clearly on the horizon. Lacking the levers for persuasion available to the lower schools, and plagued by an even greater self-satisfaction with the proven conventional means of transmitting knowledge, higher education is ill-prepared to adequately accommodate the students seeking their opportunity for advanced study.

If numbers alone were the only dimension of the problem confronting education, perhaps life could be simpler for education and educators. But, in addition, there is so much more to teach and to know. Concomitantly with the population surge of the post-war years came the scientific and technological revolution with its inevitable impact upon the social, cultural and even the political aspects of the society. This must be taught to the succeeding student generations at one level or another if they are to be even reasonably at home in the adult world.

Thus far education has but reluctantly accepted the products of the scientific and technological revolution which it can adapt to its teaching needs. Among these products are the new educational media, not the least of which is the television instrument, which have the power to transmit anything from the poorest to the best in educational communication to individuals within a classroom, or across the nation and even the world around.

The few who have tried know that television can tie together classrooms, schools, systems and even statewide and regional collections of schools to bring the best in formal educational communication to multiplied thousands of students. They know, too, that television encourages improvement in teaching and permits the realignment of the best of teaching resources into multi-media teaching and learning, and the best talents of teachers into team teaching. The television instrument introduces supplemental capacities for showing the microscopic to the naked eye, and for bringing to the individual student views and viewpoints which he might never be privileged to see or know.

The ultimate test of educational communication must be made at the receiving end--the mind of the individual student. The test of the transmission system lies in its capacity to carry the stimuli that trigger the learning response. Television has been applied to education and has passed its test. At the same time it has added a facet or two from its own capabilities. It has done so with forewarning that, given a chance, it will challenge the conventional approach to educational communication. It can meet the demands of the vast new numbers who must be taught and do the job as well and, perhaps, better.

Though each one cares deeply about the education of the individual student, the administrator, the school board member, the president, and the principal is so overwhelmingly occupied providing for the sheer numbers of students that too often he does not see the potential for the individual student nor the powers of the television to reach many more students.

WHAT CAN TV DO FOR THE PROBLEMS CONFRONTING EDUCATION?

The Instructional Quality Problem?

But television cannot convey the peculiar chemistry of the teacher and pupil inter-action in face-to-face teaching--can it? This question assertion has echoed and re-echoed off the ivy-covered walls and bounced about the terrazzo of school buildings across the land. It has been played and over-played in concert with others concerning student motivation and over-emphasis on impersonal hardware until a symphony of doubt has been played and listened to through far too many uncritical ears.

Today the symphony is discordant. It is being replayed, still, of course, but played mainly by those who haven't taken the time to find out the facts.

Early experimentation by the armed services in the realm of film and other educational media moved quite naturally into the new possibilities of television. The army's many widely divergent educational tasks, from basic training to specialized skills, were taught experimentally by television under carefully designed and controlled conditions. The learning results favored the television presentation, and with variations which permitted review, via kinescopes or video tapes, television clearly produced improved learning.

A survey of teaching experiments via television numbering several hundred, conducted by Wilbur Schramm, Director of the Institute for Communication Research, produced the conclusion that in a majority of the research situations the results showed no statistically significant difference in the learning resulting from the television experience when compared with conventional teaching methods. Some (21%) indicated better results, and some (14%) worse, but the preponderance (65%) demonstrated no significant difference.

Schramm was quick to point out that the experiments did not measure the "intangibles" of television teaching versus "ordinary classroom teaching." Some differences in the effectiveness of television teaching versus conventional methods did show up in terms of differences between elementary and high school and between high school and collegiate levels. Different areas of subject matter produced different levels of effectiveness, too, but none of these were of a significance adequate to destroy the general conclusion as to teaching effectiveness via television.

In the early days of applying television to education, those who pioneered repeated over and over again that the instrument did not threaten the teacher with technological unemployment. But echoes of the early apprehensions can still be heard, though the protest is somewhat more refined. Television does promise a re-adjustment for the teacher in many instances, whether the teacher is doing the teaching by television, is participating as a learner and a teacher in the use of television teaching by another teacher, or is a part of a teaching team both teaching and using the teaching of others. This adjustment continues to frighten some teachers, but those who have had the experience soon begin to see that the appropriate use of television holds every promise for doing an even better job for the individual student.

Very little research has been done on the processes involved in the adoption by a society of new methods and new things, but television's adoption by education should offer many situations worthy of research attention. The educational administrator who hesitates should inquire into the qualities of contagion which the use of television injects into a school system or a college. Resistance is replaced by curiosity, and even in the rational realms of education a little accurate information and experience gives reassurance and confidence. One television teacher infects another with the possibilities. Virtually every teacher, consciously or subconsciously, strives to do a better job of teaching in television. Television at one educational level suddenly attracts interest at another level, and so on.

The wise administrator soon recognizes that television might well justify the investment if only in terms of the extension of conventional teaching via television. However, inherent in the instrument itself is a stimulation toward improved instruction, and, given sufficient supplemental aid through other educational media, television becomes a positive force for more effective instruction.

No administrator, school or college, can turn his back on that prospect. Nor can he fail to note, if he will take a closer look, that the array of other tools of teaching--the books, the blackboard, the projectors, the maps, the felt boards--have all appreciated in their teaching value because of the new instrument, television.

Television can't approach its potential without the other educational media, and they cannot achieve their fullest potential without the powers of the new instrument to give immediacy, flexibility, and a new efficiency in the organization and use of all the media for teaching.

With its power to extend teaching, its power to record and store teaching, instructional television quietly demands the best from the teacher. And, then, the teacher becomes more aware of the use he can make of the tools he has at hand, as well as the shortcomings of the materials which are available. Such discoveries are the things of which the administrator's nightmares are made, perhaps, but when the night is past, the dawn is that of a new day in teaching effectiveness.

These same powers then make possible the incorporation of the best into the individual lesson, into the teaching unit, or into the course--not alone the best that can be done by one teacher, by the faculties of one school or one system, but the best that has been done to date by any teacher anywhere. What then does this mean for the curricular horizons of the individual school or system? They expand beyond the fondest dreams of the teacher, the principal, the superintendent, the dean, the president and the governing board. The weakest points in the day's lesson, the course syllabus, the vacuums in the curriculum may now be strengthened and filled in. The talents that couldn't be found or employed, for lack of funds or the right teacher, are suddenly within reach. Institutions swap their best talents, supplement each other's offerings, exchange courses, and jointly build upon each other's teaching and curricular strengths.

That same dawn brings with it a new realization of the powers of the new instrument to carry information of importance in other aspects of the total educational process outside the classroom lesson. Orientation of students, from sixth grade to junior high, from high school to college, or between other rungs in the graded ladder can become a function of television. In-service training, one-way observation as a teaching method, and other information processes--even inventory information and control--may occupy the off-classroom hours of the television system.

Yes, there are shortcomings, but they are not questions concerning the capacity of the instrument to transmit educational information, but, rather, questions concerning the information the instrument is to carry.

As one experienced hand among the pioneers of educational television has observed, the instrument can spread mediocrity as fast as it can spread the best that can be produced. But the mediocre messages which have been dispatched via television and those that will be carried in the future are not and will not be creatures of the instrument itself. Rather, they will be the products of the limitations of those who use it.

No school or system, no college or university can ever hope to have the best of everything. The happiest prospect in instructional television and general educational television is that all education may scale the barriers of its parochial tendencies to recognize that which is better and seek to bring the best to its task.

Silhouetted on the horizon are national and regional libraries in which the educational materials of television may be evaluated, stored, catalogued, reproduced and made available for use in supplementing the basic offerings of any school or institution in the land. The availability of such services need never raise a fear of conformity, or uniformity, for the materials will be supplemental to the educational foundations provided in the individual classroom or teaching situation. And, that which may be judged better or best today will forever be challenged by the constant movement of knowledge, newly discovered knowledge and the creativity of the individual teacher who is always searching for the new and better way.

WHAT ARE THE DEVELOPING PATTERNS IN THE USE OF TV IN EDUCATION?

Educational television has its own nomenclature and its own "alphabet soup." To the uninitiated, the terms are new and often difficult to comprehend. The alphabet language further complicates an effort to understand educational use of the medium.

The umbrella term is ETV, or Educational Television. The term denotes a television station operating on a not-for-profit basis over a channel reserved for educational use, but it connotes the full range of television programing designed to instruct and inform as against that designed purely to entertain.

More often than not, the term ETV carries a heavy implication of broadcasting; that is, the pictures are thrown out over the terrain for anyone to view who has the set capable of receiving the signals. In contrast to this system, in closed circuit television--CCTV--the communication is private and is directed to specific receivers where, it is expected, particular people may be expecting to watch. CCTV simply describes the method. The signals travel on a cable or via microwave which limits reception to specific receiving situations. The messages carried may be educational or not, commercial or non-commercial, for that matter.

Then comes ITV, Instructional Television. This umbrella is smaller than ETV for it connotes programs or communication designed specifically to instruct. The suggestion is a somewhat more formal idea than ETV, because ITV is more closely related to subject matter carefully organized, presented in sequence, filling out an entire course of study or simply supplementing the teacher's efforts. The boundaries are hazy between these terms because ITV may be transmitted via closed circuit or on a broadcast basis. When ITV is broadcast, it is also ETV. ETV has a broader connotation encompassing the broadcast general education presentation in addition to that which is formally instructional.

The entire field of formal education, from pre-school to post-graduate seminars is open to the application of the television instrument. The instrument has its applications as well in the informal education of a nation stretching over the range from the toddler to the tottering.

One more alphabet item for the educational administrator and policy maker to tuck into his lexicon for television is VTR, video tape recorder. This is the device which can store television program materials for later use, and the dimension it has added to the potentials for educational television are as yet beyond measurement.

Closed circuit television in education is growing rapidly with uncounted installations, from the simple to the elaborate, serving also uncounted numbers. Because it travels its signals via coaxial cable or microwave, closed circuit television has no problem of space in the spectrum. The limitations of its equipment determine the number of channels it may employ.

Many varieties of closed circuit systems are in operation ranging from one link between camera and receiver in the same room to 167 interconnected high schools and 14 higher educational institutions scattered over the state of South Carolina. They are being used to stretch teaching space, to supplement the teacher supply, to combine and teach large classes, to link widely separated classrooms, to observe teaching and learning, to supplement the day's lessons, to carry the entire day's teaching presentation, not least of all to improve instruction, and finally to effect economies in the educational process.

Many of these same ends are also being achieved through broadcast television today. There is every reason to believe that rapid growth will occur in the years immediately ahead in the licensing, construction and operation of educational television stations.

Educational television on a broadcast basis is subject to license, simply because the physics of the matter require that assignments be made to operate on separate and distinct channels in order that one operator may not interfere with another. Each such channel has a commercial potential, hence, through the persistence of a few farsighted educators and the courage and foresight of a few government officials, the prospect of holding some television channels for educational use was achieved in earlier years and has been maintained in more recent years.

Today the Federal Communications Commission, in whose jurisdiction all licensing power falls, is proposing a still further reservation of television channels in the UHF ranges for educational purposes. Currently there are about 350 reserved channels. The FCC proposes to raise the total to 703, and this proposal is being debated with the National Association of Educational Broadcasters who think that a plan reserving 1,000 channels for education is a still better plan.

In general, the FCC has sought to locate a reserved educational channel in every community in which educational interests have indicated a need and two in communities where more than one has been requested.

One close observer of the rapidly developing application of television to educational tasks, estimates that the currently licensed and operating 83 ETV stations will increase to a total of 300 by 1966.

As the numbers grow, so grows the opportunity and feasibility of interconnecting groups of them into networks through which educational communication can be shared. Statewide networks are now in being, as are networks in contiguous states interconnected to allow live television over the entire course of the net. Other networks enjoy an interrelationship which doesn't include the live program capability but which is based on the provision and exchange of programing via recordings.

In the network concept lies one of the answers to the building up of a reservoir of educational materials of quality with numerous production centers producing for other than their own use and sharing the productions of other producing operations.

The greatest stimulant to production of educational television materials has been the National Educational Television and Radio Center. Recent policy changes in this organization which call for its attention to be concentrated upon high quality programing for educational purposes, promise to make state and regional networking even more important in educational television.

The foundations have been laid, though the superstructure is slow in rising, for the creation of a nationwide interconnecting of educational television stations with a live program capability. Knowledgeable educators see in this one of the nation's most important educational and cultural assets.

Still another pattern for the broad dissemination of educational communication has been under extensive testing and the experience is showing interesting potential. It is the Midwest Program on Airborne Television Instruction (MPATI) through which instructional television is broadcast from high flying aircraft to schools in a six-state region.

MPATI attacks the problems of programing and disseminating educational communication by adding new dimensions to the technology, in programing and in the economics of educational television. The program covers a six-state universe of potential school consumers of widely differing quality. It ties in several production centers through cooperating colleges and universities, and it substitutes a broadcasting station--or several of them--at an altitude of 23,000 feet in lieu of many ground-based stations. Even now MPATI seeks four additional channels to enable the program to expand vertically into collegiate realms and horizontally into a wider range of subject matter at the several grade levels it now seeks to serve.

One thoughtful educator, experienced in educational and instructional television, has observed that the capacities of television to serve education are limited only by money and imagination. The patterns which are emerging strongly suggest that the insatiable appetite of television and the constant drive for improved quality in educational communication via television have established the trend toward combinations of station facilities and talents which may logically cooperate and enhance each other's educational fare.

Mention must be made again, however, of the promise which the recording, storage and reproduction of quality educational television materials holds for the school, the school system, the college, the university and the extension center. Libraries for such materials are in the experimental stages now. They suffer mainly from a paucity of customers and of quality material neither of which can be far away. Under various sponsorships, and with support from the Title VII program of the National Defense Education Act administered by the U. S. Office of Education, three such libraries are now operating. They are the National Instructional Television Library in New York, the Northeast Instructional Television Library in Cambridge, Massachusetts, and the Great Plains Library at the University of Nebraska in Lincoln.

WHAT ARE THEY DOING IN OTHER COMMUNITIES?

When the rooster escorted the hens to see an ostrich egg just to let them see "what they are doing in other communities" he may have been suggesting the impossible. However, a glance at the educational television developments in many communities, states and regions of this nation suggests that much more is in the realm of possibility if only someone is willing to make the try.

Higher education in the south has a firm grip on its own bootstraps, and it has been tugging away at them for several years with results which have attracted the rapt attention of higher education throughout the land. Educational television has been a factor in this effort, and today more than one-third of the ETV stations in the nation are in the 16 states comprising the region encompassed by the Southern Regional Education Board.

State networks figure strongly in the plans of most of the states in this region. In several states they are realities, base stations are operating in other states, and interconnection sometime in the future seems a foregone conclusion. The SREB, in fact, has projected the needs of the 16 states for ETV channel reservations at 330, 231 more than the 99 channels now on the air or reserved for education in these states.

Program content ranges from an attack upon adult illiteracy to post-graduate and continuing education in medicine. Television is a major tool of many agricultural extension programs, teacher training employs the medium extensively, many aspects of teaching in nursing, medicine and dentistry employ television, and higher adult education finds television a major vehicle to reach an education-hungry adult populace.

ETV pioneers are beginning to notice a change in "the ole gang" that once wept on one another's shoulders when they met to decry the lack of interest in their explorations. Today, however, they say strangers in the persons of community leaders, legislators, and educational administrators are popping up in the educational television seminars as the potentials of ETV have begun to seep into the conscience as well as the consciousness of the public. Stronger evidence is provided by legislative actions providing funds and authorizing state networks in some states.

Then, at the top of the map there is considerable excitement over the rapid expansion of educational television. A regional network is comprised of 11 stations stretching from Maine to Washington, D.C., with seven of the 11 stations interconnected for live distribution of programs by a variety of methods and means. The four not yet connected affiliates are serviced through video tape recordings. The dreams for development of this Eastern Educational Network, Inc., still stretch out beyond the present accomplishment. Maine is about to have a full-scale, statewide network in operation, with a variety of ownership arrangements including one station owned by a combination of private colleges, another by the state university. Satellite transmitters and translator stations figure in the spread of educational television in New Hampshire and Connecticut as a means of covering an entire state with transmissions from one base station.

Another recognizable trend shows itself in the northeastern states, the need for a second educational channel in thickly populated areas in order to provide the service literally being demanded of educational television. Boston, Philadelphia and New York are proof points of the fact that a single channel expertly operated cannot supply the demands for educational television fare.

Over the Alleghenies to the central states, from Michigan to Oklahoma, and from Ohio to North Dakota, there are 27 ETV stations operating with much activity directed toward the establishment of other stations. Only Indiana does not now have an operating ETV station. Virtually every state has some surveying going on looking toward state networks. The six states of North and South Dakota, Minnesota, Nebraska, Iowa and Wisconsin have organized Midwestern Educational Television, Inc., looking to the establishment of an interconnected network. At this time they are just beginning regular program exchange services among the states.

One flare goes up from an ETV pioneer and an astute observer of the midwestern scene with respect to educational television. After many interviews with the legislators, he harbors a gnawing feeling that the legislators may be ahead of the educational administrators in their thinking about television as part of the solution to the problems of education even to the point of expecting it to require an investment of additional tax dollars.

In the western states, activity in educational television suggests a rough division of the states into those which are active and increasing their activity rapidly (Washington, Oregon, California, Arizona, Utah, New Mexico and Colorado) and those sparsely populated states in which educational television is only in an early stage of development (Nevada, Idaho, Montana, Wyoming, Alaska and Hawaii).

Another regional educational combine, the Western Interstate Commission for Higher Education, has taken a hand, and through its devices it is creating a greater awareness of the possibilities for creating expanded educational opportunities for western youth among educators and the public alike through employment of the television medium.

Educational television in all its forms is no longer a novelty, a temporary phenomenon, a plaything for the adventurous, a gimmick, or just so much hardware. The old cliches for passing off that which offers new vistas but presages changes in the old order are no longer good. The instrument has proven its value in most every situation and circumstance in education, better in some instances, weaker in others, but, in the main, it has shown an educational effectiveness equal to the conventional way, sometimes better, seldom worse.

Gradually, but at an accelerating pace, individual units are being organized into combinations for sharing the best that has been produced. The vestiges of early preoccupation with the commercial methods of using television are disappearing. Seeping into the pores of our educational systems is the realization that the tube may soon be as common to the classroom as the chalk, and that a major part of the population will spend some time with the dial turned to a station concerned only with building the informational, educational, and cultural levels of the nation.

WHERE ARE THE TALENTS TO USE TELEVISION IN EDUCATION?

The successful television teacher needn't be a matinee idol, nor a clown, nor a ham, nor the dramatic type. The talents to teach with television are coextensive with the talents possessed by the effective teacher.

Not all teachers will leap at a new thing, and teachers are not lining up at the door of the production studios. The ore must be mined. It isn't far below the surface. The good teacher can be intrigued by the potentials of television and succumb to the allure of the possibility of doing better that which he already does well.

Those teachers who have tried television will testify that the medium opened new vistas to them at the same time that it demanded more of them. Teaching with television and attempting to utilize the full capacities of the educational media as well as television is more difficult, but the results can be more satisfying to the teacher and produce a better result for the student.

On virtually every faculty there is the Pied Piper, if only the school will provide the pipe. The first and fundamental decision, to embark upon the use of television for instruction, isn't the teacher's decision ordinarily. The underlying economic and administrative adjustments belong to administrators, and those decisions are not alone equipment decisions.

Involved, as well, is a commitment to the support which the television teacher must have in access to the other educational media, to assistance in planning, production and direction.

But the warning flags are up in other personnel aspects of educational television at this time. They do not signal disaster, as yet, for there remains time to avoid it.

There will be an increasing need for those who can carry on the technical requirements of educational television and the other educational media as well. One prophet predicts that there will emerge in the not-too-distant future the "educational technologist", trained on a sub-collegiate, technician level.

At the same time, he suggests, there must be an up-grading of the preparation of those who may be expected to administer, manage, plan, guide and direct the utilization of educational television, educational media centers or total-learning resource centers. These, no matter in what field their foundation studies may have been, will be prepared in an inter-disciplinary approach to educational communication. They will have substantial preparation in the psychology of learning as well as the arts of producing educational material for effective teaching.

These will be the people who will possess the vision and imagination with which to conceive the techniques and methods by which to assist the teacher in the planning, design, and execution of expert television teaching.

The full creative powers of the teaching profession remain one of the greatest assets of the nation, but they have not yet been fully capitalized.

WHERE IS TV IN ITS OWN TECHNOLOGICAL EVOLUTION?

The man who decided to wait "until they perfect the darned thing," probably still is enjoying the thrills of Niagara Falls through the stereoscope. However, the prudent administrator must give some thought to the matter of when to invest in equipment for educational television, for, as one engineering consultant has observed, "modern television equipment is expensive; but so is obsolete equipment."

The technology of television has moved steadily ahead with occasional great, dramatic spurts in applied areas, such as the advent of the video tape recorder. Research and experimentation continues in highly refined realms beyond the ken of most of those who use or view television, and the prophets conjecture that a field which one of them has dubbed "intellectronics" will make a 100-fold change in educational effectiveness.

Despite the continuing emergence from the laboratories of marvels undreamed of, the educational administrator today can safely, with expert consulting help, put together an effective system or systems of television equipment to meet the educational needs which television may satisfy.

The systems can be broken down, for the convenience of the non-technical mind, into these categories: origination equipment, recording equipment, distribution equipment, and receiving equipment. Technical advances are being made steadily in each category.

At the originating end, the cameras still are of two basic kinds--the image orthicon and the vidicon. The image orthicon has been the major studio camera. It is more complex, larger and heavier, but it possesses some capabilities still not available in the vidicon camera. However, the vidicon, the work-horse for the odd jobs of television and for many industrial tasks has been greatly improved. A new vidicon tube known as the "plumbicon" is currently emerging. It promises to reduce the higher light levels needed for the vidicon and to perform other wonders in improving both black and white and color television pictures.

Solid state physics contributes constantly to television technology. The transistor and the diode are making equipment more compact, reducing the heat factor, providing greater equipment stability and requiring less maintenance. Soon it is expected that much maintenance and repair may be accomplished with "plug-in modules" in which entire circuits may simply be withdrawn and replaced on a plug-in basis.

Despite the steady technological movement, the administrator or governing board may, with impunity, invest in a television system, with good engineering advice, and be assured of achieving completely satisfactory technical standards for educational television. He need not hesitate. The machinery is available, reliable and warranted to do the job. As the technology advances, results are improved and costs of operation are reduced. The administrator may experience some frustration, but the need for educational television is here now. The technology is up to the task.

Perhaps the greatest frustration of educational television operation was alleviated with the advent of the video tape recorder. Early struggles with the kinescope, which recorded the television picture on film for later use, set many a director and engineer to jabbering. Then came the video tape recorder with an unbelievable impact, because it provided so so many new capabilities. It can record. Immediate review is possible. The tape can be stored or distributed and replayed all with high technical quality--and the tape can be erased and re-used.

Video tape recorders are undergoing changes today which promise to reduce their cost while maintaining the quality of their recording. However, one large snag remains. Two different systems are being used for recording. One of these, the transverse scan system, has been pretty well standardized, and a tape recorded on one recorder may be played back with equal results on another employing the same system. The other system, helical scan, still remains unstandardized. Until a standardization is achieved, there is little assurance that a video tape recording on one of these machines can be played back on any other machine with the same result. The impact of the video tape recorder, still under continuing development, will echo through the studios for a long time. The new powers which it presents to educational television have been realized only in part to date.

The television distribution processes are, also, undergoing change and improvement. Old methods are being expanded, and newer methods are emerging. The expansion of broadcast television for education rests chiefly in decisions to be made by the Federal Communications Commission concerning a new Table of Channel Assignments. At present the FCC proposes a Table containing 2,634 assignments with 703 reserved for educational use. The National Association of Educational Broadcasters proposes an assignment of 3,214 channels with 1000 reserved for educational use. Education has a stake in these discussions.

In any event, an increase in reserved channels for education is bound to occur, mainly in the UHF (ultra high frequency) range. A UHF frequency has, in general, a shorter "critical distance" than does a VHF frequency, and a channel in the lower ranges of either VHF or UHF is generally more effective than a channel in the higher ranges of either category.

The educator today need not be nearly so hesitant about investing in a UHF station for several reasons. The technology of UHF is improving steadily, but, more importantly, all receiving sets produced after April 30, 1964, must be all-channel receivers. There is reason to believe that the conversion from VHF-only receivers (most receivers today) to all-channel receivers will proceed rapidly with the help of the persuasive salesmanship of the industry and the advent of new UHF stations of both the commercial and educational varieties.

The need for sharing and interchanging programs has required the development of methods for transferring television signals from one place to another, or from one station to another. Much of this is accomplished by microwave systems. This technology is advancing, also. Microwaves operate at frequencies higher than the UHF frequencies and shoot signals from one place to another on "pencil-like beams." They are used in numerous different situations in television, and they have a direct application in tying together stations in an educational network. Once tied together via microwave, networks can find many uses for the microwave system, for other information may be transmitted simultaneously with the television signals. The system may be used to carry other data from point to point, to deliver administrative or research information or feed a computer from a distance.

An educational institution or school system considering a microwave system clearly needs consulting assistance. There are numerous combinations of microwave systems, and the availability of commercial microwave service for lease introduces additional considerations relative to comparative costs between ownership and leasing arrangements.

The fastest growing distribution systems are the closed circuit systems. These carry the signals by coaxial cable, for the most part. Education is making use of these in many ways--within a single classroom, to interconnect buildings, to tie campuses together, or to collect many high schools and colleges on a network as has been done in South Carolina. Still another system, which also has application to educational situations, is the community antenna television (CATV) in which weak signals from distant stations are strengthened and redistributed via cable to subscribing receivers. Often when a CATV system is installed in a community, a local educational channel will be added free of charge, thus providing a closed circuit educational service programed locally or providing programs from a distant ETV station.

The airborne system of distribution is proving itself now and is seeking greater capability through the allocation of additional channels and supplementation from ground-based translator stations.

Still another distribution system has been made available by the FCC. It is known as the 2500 megacycle instructional television fixed service (ITFS). It is available for educational use. It will operate as a broadcast system, which must be licensed, but it will operate much as a private closed circuit system. The new ITFS, for which equipment has not yet been produced, allows the transmission of television signals from one place to another on a line-of-sight basis to receivers pre-tuned to that specific channel. It employs a low power transmitter. Such a system could employ five channels over which five different programs could be transmitted at the same time to several different places within a range of about 15 miles. In addition, the transmitter may be unmanned, thus reducing operating costs.

Again, the educator has before him reliable systems with high performance standards now commonly in use and fully capable of accomplishing the origination, recording, distribution and receiving of educational television.

In addition, there are some new developments ready for experimentation and use. And, then, there are possibilities on the horizon of unbelievable promise. The earth orbiting satellites provide every possibility for global television service illustrated best by the fact that the solemn funeral ceremonies for the late President John F. Kennedy were relayed, via satellite, to 23 countries and a total population of 600 million people, the greatest potential audience for any event in all time.

Based on different physical principles and working at levels 20,000 times higher in frequency than the 50,000 megacycle upper limits of radio radiation is the LASER (light amplification by stimulated emission of radiation). In brief, the LASER may make possible the simultaneous relay of as many as a thousand television signals over long distances on a single light beam.

WHAT ARE THE SPECIAL LEGAL, PROFESSIONAL AND ETHICAL PROBLEMS IN EDUCATIONAL TELEVISION?

The relationships created in the use and programing of educational television are generally analogous to those which pertain in the teacher's relationship to production in other educational media. However, not until the uses of television in education reached their current state of development and use have the legal, professional and ethical considerations inherent in these relationships come to focus.

Out of the use of television in education, in many instances, comes a recorded product. From this fact there arises a series of questions concerning the ownership of the product, the rights of the institution and the teacher to control its use, its revision, its re-use, its exchange, and its resale and distribution.

There is a lag between the technological and program development of television and the policies and practices which might be expected to govern these relationships. Much attention is being given today by such groups as the American Council on Education and the National Education Association to the development of guidelines in the appropriate management of the rights and interests growing out of the relationships in educational television.

No widely accepted or standardized patterns with respect to the compensation of teachers teaching via educational television have developed. The practices vary widely with special differences being apparent between the practices in the elementary-secondary school levels and higher education. There is a general concurrence in the recognition that teaching via television involves a special effort, the devotion of much time and an expression of creative and professional talents which place the teacher in a different relationship than that of his classroom colleague. With this concurrence there is a growing agreement that some form of additional or different compensation is warranted for the television teacher.

The professional interests of the teacher in a recording of his professional practice are generally agreed to give the teacher a special right in the matter of revising and up-dating the effort as to when and to what extent revision should be undertaken. Not so clear are the kinds of interest a teacher might properly have in the re-use of his television teaching within the same institution and its use outside of the institution. Should the teacher have a voice in control of the use of his work? Should he be compensated for repeated use either on or off the campus?

The fact that educational institutions and systems mutually aid one another through the exchange of TV teaching materials discourages the realization of income or profit from extending the use of teaching film or tape. Hence, consideration of additional compensation for use outside the institution, or the payment of royalties, has produced no standardized practice largely for lack of experience.

The administrator using educational television can expect to see standards in these relationships evolve as the uses grow, but pending this event, he is well advised to reach written agreements with the television teacher in advance of the effort in the best interests of good working relationships and the avoidance of future disagreements. The elements to be included should cover compensation, working conditions, supplementary help and such rights as are to be reserved in re-use of the material and in its eventual revision.

Either in addition to the written agreement with the individual teacher, or in lieu of it, an institution should consider the establishment of general policies governing teacher or professor participation in teaching via television. Such policies, though they may be frequently revised, will provide an important reference point as television is employed in education in new subject matter fields and in new ways.

Generally, the ownership of an educational television product is deemed to rest in the institution with whose resources it was produced. In addition, to its consideration of the professional and ethical relationships involving the teachers, the institution should look to the protection of its own interests through the use of copyrighting. Relatively little educational television production, or material supplementary to educational television, is now being copyrighted.

The Copyright Act of 1909 now operative in the United States, is under serious study at this time looking toward revision by the Congress. The interests of educational television are deeply involved in the revisions which have been proposed. Of major concern is the proposal to delete the provisions which allow the use of certain copyrighted material when the use is not-for-profit. Such a deletion would have serious implications for educational television.

Other changes under discussion having implications for educational television are the codification of the "fair use" doctrine as developed by the court interpretations and the inclusion of a provision which would hold that a performance of a creative work is tantamount to publication of the work. If such were the case, the creator would lose all his common law literary property rights unless he had undertaken to protect them under the copyright statute.

Experts in education and in the field of copyright law are expressing alarm at this time and urging that education and educational television look to their interests as they may be affected by the proposed revision in the Copyright Act.

Just as the new television technology and its application to education will cause changes in the methods and processes of education, so will follow changes in the rules, regulations and the laws which bring order and stability to the professional and legal relationships involved in educational television.

CONCLUSIONS

One participant in the Benchmark Seminar on Educational Television acknowledged the appropriateness of the benchmark theme as a beginning place from which levels are measured. Still, he noted, the term might be interpreted to suggest the marks left on the bench by the player who didn't get into the game.

To carry his alternate suggestion a bit further, it is to be hoped that the Benchmark Seminar may bring educational administrators and governing boards to new consideration of the potentials inherent in the application of television to education. The game is on, the bench warmers will contribute little to the game unless they get into it.

Another participant observed that television is in American education, but it is not yet of American education. To make television of education there are policy-level and administrative-level decisions which must precede all else. The instrument must be available before the creative talents and initiative of the reservoir of teaching talent in schools, colleges and universities incorporate the advantages of this new medium into the methods and systems of American education.

Gratuitous advice is seldom appreciated, but on occasion such advice strikes an open eye or ear. In this instance, the educational administrator and the policy maker are urged to gather printed materials from one or more of the sources listed later in this report, read and digest them, and pass them on to others who participate in the decision-making by the Board or the executive group.

Secondly, seek out an experienced person in educational television, someone who has had responsibility for the installation of ETV or ITV into a school system or college or university, and bring him before your administrative or governing group to discuss educational television with you.

Then, set forth by delegating responsibility to an appropriate person or committee to study the needs and problems of the school system or institution in relation to the potentials of television, to meet those needs and to help solve the identified problems.

In the interim of assessment and study, the committee should be provided sufficient time at appropriate intervals for reports and discussions with the Board or executive group. By this process of building awareness and participation you will isolate and define the points of decision relative to the question of whether or not educational television holds answers for some or several of the problems which the institution faces today and tomorrow.

If the decision is negative, hold the matter open and ask your committee to continue to keep pace with the advance of educational and instructional television. You may very well wish to reconsider at an early date.

If the decision is made to embark into educational television, then consider carefully the wisdom of retaining a competent consultant to assist with the embarkation and the problems of getting underway and to build staff competence.

Simple advice like this may not catch the attention of the educator while he tends to today's problems. Education is plagued today with the doing of the urgent at the expense of the important. Educational television is important. It should not be given the casual and the cursory once over lightly. Decisions about educational television should not be made on such a basis, but decisions about educational television should be considered carefully by every responsible administrator and policy maker in American education. Its achievements to date command such attention.

PART II

WHAT ARE THE ECONOMIC IMPLICATIONS OF TV IN EDUCATION?

WHAT ARE THE ECONOMIC IMPLICATIONS OF TV IN EDUCATION?

The impact upon a society of widely disseminated educational programs which heighten the information level and increase the cultural experience and appreciation of a substantial proportion of a population defies measurement. However, economists today are paying new deference to the increment added to the nation's economy by education.

The economic impact of the use of educational television by broadcast or by closed circuit, when considered in the light of the specific educational tasks of an institution or a school system, may be more nearly approximated and, perhaps, precisely measured.

The educational administrator and policy maker is unlikely to find financial savings in educational television if he sets out to do only that which is accomplished conventionally by his institution now. When the additional objectives of extending education to more students and of the necessity for improvement of instruction are considered, the educator can begin to consider educational television in terms of financial savings. If only the teaching of new numbers is considered, financial savings may be possible if sufficient additional numbers of students are taught and ETV costs are offset against the costs of providing teachers and learning space of the same quality in the conventional manner.

The intangible which defies capitalization but which cannot be disregarded in measuring the economic impact of educational television is the improvement of teaching quality. If educational television is to be employed to its full capabilities, then other costs must be added, principally, the costs of integrating other educational media into the use of educational television. The consequence of developing other educational media will probably enhance and improve teaching throughout the system or institution through applications to instruction other than via television.

The whipping and stirring of educational television into the institutional operation also has its influence upon numerous other aspects of the educational patterns of that institution, such as class scheduling, the non-classroom utilization of educational television by the individual student, the introduction of team teaching, the recapture of teacher time to be applied on other educational or research endeavors and improved use of the teaching associates or assistants under the guidance of the master teacher. All of these have economic implications which may be most difficult to measure but which may mean an improved use of time and talent in the total institutional operation. Like stirring chocolate into white cake mix, educational television soon begins to show its traces in many facets of the institution until, finally, it enriches and colors the entire operation.

Volume operation is the key to financial savings through the use of television to teach additional numbers of students. If the volume is increased sufficiently, financial savings may well be realized as against the cost of tackling the same problem by conventional means. When television is employed to accomplish a larger teaching task with careful utilization of the special capabilities of television to improve the teaching/learning result the odds may well favor the use of educational television. The variables in each institutional situation and in each television system are many. Hence, broad generalization becomes risky and perhaps not helpful to the educator planning ETV for his institution.

The administrator and policy maker in education need not experiment in the dark. There are accumulated reservoirs of experience and knowledge if they can be isolated and identified, and the neophyte can obtain access to them. Some of this experience and knowledge is set to paper, but most of it resides in the minds and memories of pioneers who are still in the midst of extending their early experiments. In very few places, even among the most experienced who have recorded their knowledge, has the recording been done in a dollar-context to which the educator can repair to find the dimensions of cost which might be involved in the application of television to his particular problem.

The Benchmark Seminar, supplemented by subsequent round-table explorations, clearly identified this void in the currently available materials. The void exists primarily because the myriad variables in the application of television to education have not been distilled in the manner necessary to provide the most help to the educator contemplating the move into educational television. Neither have the information chemists sought to precipitate the experience into the kind of economic information the educational administrator and policy maker must, of necessity, consider.

However, the supplemented Benchmark Seminar has produced a tentative model which, it is believed, could be developed into a manual of dollar experience. The supplemental round-tables did conclude that the need for such a manual demands immediate exploration. Such an instrument might provide a decision making base for the educator contemplating the use of the television instrument.

The design was based on the assumption that the accumulated experience with television in education could be organized into a number of broad categories of application. Hopefully, then the educational administrator would be able to identify the problems with which he may think television might help within one of the broad categories.

Once the administrator aligned his problems with one of the broad categories, he could then approach that section of the manual devoted to the applications of television falling within that broad category. Then, each problem could be matched with one or more of the applications.

As envisioned by the Subcommittee, each individual application sheet would have two main elements. On the front side, a "cost matrix." Down the vertical axis of the matrix, four basic requirements:

1. origination, picture and sound
2. storage and replay
3. distribution, picture and sound
4. reception, picture and sound

Across the horizontal axis of the matrix, five basic cost factors:

1. physical plant
2. equipment and supplies
3. operating personnel
4. operation and maintenance
5. program planning, personnel and materials, etc.

Not all applications would require the insertion of cost and other descriptive information in the resulting boxes in the matrix, but whenever the particular application called for the insertion of information, the administrator would find cost information pertinent to each of the functional requirements pertinent to that application. Each matrix could be supplemented with a capsule discussion of that application with estimated cost ranges which take into account the fact that numerous applications can be undertaken with differing investments varying with each of the cost factors.

The second major element on each individual application would be a schematic drawing of a television system which might be designed to achieve the object of that application.

The design of the cost matrix and the schematic presentation will not be intended to provide the administrator with a precise design and cost estimate, but, rather, to give him a "ball park figure" and a knowledge of the elements within a television system which might be expected to apply to this problem.

In addition to an introductory discussion and a glossary of terms from educational television, the manual would provide a series of case studies applying the technology of television to educational needs.

The completion of such a manual is a task beyond the scope of the Benchmark Seminar. However, the conclusion is that the isolation of the need and the design of this possible solution are worthy of being set forth in the hope that this work may soon be under way and encouraged to early completion.

The supplemented Benchmark Seminars further isolated needs in the area of educational television economics for which it did not produce designs for solution but for which investigation of approaches to solutions is urgently indicated.

The first of these concerns the need for the development of a system of standard accounts which would enable the users of educational television, and particularly those utilizing open circuit television, or educational television stations, to account for the dollars invested in a like manner. Only when the same kind of dollar expenditure is accounted for within a system of standard accounts can meaningful information be developed concerning operational costs of such television systems. Here again, only with such information can those contemplating the use of television approach a reasonable understanding of the investment needed and the advantages to be gained by such utilization of television.

The second of the needs for economic information upon which considerable study is needed, and again the Benchmark Seminars did not attempt a design for solution, is the need for economic analysis of the impact of the utilization of television upon the on-going operation of a school, a school system, a college, a university or a system of colleges and universities. In each of these educational situations the application of television to one or more educational functions is likely to have profound impact upon the conventional deployment of educational resources. Faculty time, the utilization of space, the rearrangement of class and course scheduling, and numerous other aspects of conventional school and college operation can not but be affected.

The premises upon which such studies are undertaken, as was mentioned earlier, can not alone concern the saving of dollars but must, as well, concern the quality of the educational result, a somewhat more nebulous quality to discern and to measure. Some tentative steps into exploration of the impact of the use of the television upon institutions have been made, but here again, until bolder designs are undertaken and model studies result can the uninitiated find the information that might be expected to make their steps toward educational television more sure-footed and confident.

The mistakes of the pioneers need not be repeated if their experience can be studied, distilled and brought forth to aid those who next will travel this way to blaze new and better trails.

PART III

A PLAN FOR CONDUCTING A CONTINUING CENSUS ON THE USES OF TELEVISION IN EDUCATION IN THE NORTH CENTRAL ASSOCIATION

BACKGROUND

The Subcommittee on Television of the North Central Association of Colleges and Secondary Schools has been interested in the use of television as a medium of instruction and for general educational purposes since 1953. Over the years, the Subcommittee has attempted to follow the directive of the NCA Executive Committee: "To inquire into the status of television in education and, from time to time, bring to the attention of member institutions pertinent information in this regard."

The past few years have witnessed increasing interest and rapid growth in the uses of television by the member institutions of the Association. Even so, there has been no regularized method or procedure for obtaining quantitative data in this area nor any mechanism for speedily identifying such facts as the different types of uses among Association institutions, the number of teachers and pupils involved, the subject matter areas using television, etc.

In March, 1963, the Subcommittee on Television submitted a proposal to the United States Commissioner of Education for: "Two Depth Seminars on Current Status, Continuous Census and Projected Uses of Television in Education for the Next Decade." One of the proposal's objectives was identified as follows:

> To develop a plan of obtaining reliable data in the 19 states concerning costs, equipment, personnel, utilization techniques and procedures employed in the current Uses of Television in

> Education and to use such data for the purpose of refining the plan which may result in a continuing census on such matters.

In June, 1963, the Subcommittee's proposal was approved by the United States Office of Education.

METHODOLOGY AND INSTRUMENT DEVELOPMENT

In order to fulfill the census portion of the study, it was necessary to seek permission from the NCA Board of Directors to circulate a questionnaire. On September 11, 1963, Donald G. Emery, Vice Chairman of the Commission on Research and Service, and a member of the Subcommittee on Television, initiated such a request. The Board of Directors granted permission for the survey and work was begun on the development of a preliminary census instrument in October 1963.

Consultations with appropriate researchers at both The Ohio State University and Indiana University resulted in a short-answer-type questionnaire. Several Subcommittee planning sessions were held to validate the initial instrument and a "preliminary questionnaire" was subsequently developed. This instrument was field tested upon a group of college and public school administrators. From the field test period, it was determined that two separate questionnaires should be duplicated for distribution to the NCA membership.

PRELIMINARY QUESTIONNAIRE

The preliminary questionnaire was sent to the 469 colleges and universities and 3,606 secondary schools constituting the accredited NCA member institutions. Each institution was asked to complete and return the questionnaire by February 15, 1964. Data from completed questionnaires were transferred to coding forms, then onto punch cards for machine tabulation.

More than 85% of the colleges and universities (402) responded to the preliminary questionnaire. Twenty-four per cent (99 respondents) reported using television in instructional, research, or administrative operations.

Slightly over 62% of the secondary schools (2,246) responded to the questionnaire. Approximately 20% (457 respondents) of the secondary school membership reported they were using television.

After an extensive review of the data compiled from the preliminary questionnaire, it was decided that some of the items needed to be either rephrased for clarification or eliminated entirely from the questionnaire. A copy of the preliminary questionnaire may be found in the Appendix.

CENSUS QUESTIONNAIRE

Following revision and simplification of the preliminary questionnaire, a second instrument was prepared for mailing on April 30, 1965. A copy of this second, or census questionnaire, may also be found in the Appendix.

The census questionnaire was designed to conform closely to the NCA Annual Report. The school identification information was more comprehensively indicated than in the preliminary questionnaire. With few exceptions, each question posed could be answered by checking the appropriate response. Wherever a written response was required, a short answer normally sufficed. It was estimated that the census questionnaire could be completed easily in under 15 minutes.

The census questionnaire was pre-coded so that a key punch operator could transfer the responses directly to punch cards, thus eliminating one step in raw data handling.

The census questionnaire was mailed to 478 colleges and universities, an increase of nine institutions over the preceding year. Of this number, 360, or approximately 75% of the total collegiate membership, responded by the cut-off date. Of this group, almost 21% (74) were using television.

At the secondary level, the census questionnaire was mailed to 3,628 schools, an increase of 22 schools over the preceding year. More than 66% (2,442) of the secondary school membership completed and returned questionnaires. Just over 16% (395) reported using television.

Data obtained from the census questionnaire represent an official enumeration of the uses of television in education in the North Central Association for academic year 1964-65. These data will be used to advise the Subcommittee as it continues to:

> . . . inquire into the status of television in education and, from time to time, bring to the attention of member institutions pertinent information in this regard.

These data will be disseminated to the general NCA membership during the Subcommittee's portion of the Annual Program in March 1966, and be published in a future issue of the NCA Quarterly.

IMPLICATIONS AND DIRECTIONS FOR A CONTINUOUS CENSUS

This phase of the USOE proposal called for "refining the plan which may result in a continuing census. . ."

Review and analysis of the data gathered from the census indicated that additional refinement of the instrument would be desirable if perpetual updating of the information is to proceed. Certain areas of interest, particularly with regard to the numbers of students being taught with television, the number of teachers receiving television in their classrooms, etc., need editing and clear definition in order to obtain comparable figures from both collegiate and secondary school respondents.

It is believed that all future census reporting can be accomplished more effectively and economically as a two-fold operation. In its first phase, a pre-coded punch card will be mailed to the entire membership in a general mailing from the NCA Secretary's office. Member institutions will be asked to complete five questions and return the card to the Subcommittee on Television.

Institutions will be asked to give: (1) identifying information; (2) school information; (3) number of teachers; (4) number of students; and (5) does the school use television?

If an institution returns a card stating that it is using television, a more detailed survey instrument will be sent to the official providing this information. This instrument would seek data on costs, equipment, personnel, utilization techniques, and procedures employed in the current uses of television in the schools. An example of the proposed forms to be used in a future census of NCA membership is included in the Appendix.

It is the Subcommittee's belief that this refined instrument and improved approach for census taking will encourage a higher percentage of response, permit more rapid processing of data obtained, and provide for a perpetual inventory of quantitative data on the uses of television in education throughout the NCA. Any pertinent information could then be brought to the attention of the entire Association membership on a regular reporting basis.

PART IV

THE PROJECTED USES OF TELEVISION IN EDUCATION FOR THE NEXT DECADE

INTRODUCTION

Unlike the tourist who couldn't be bothered with the fact that he had lost his way since he was making such good time, the Benchmark project paused both to see where educational television had been and to take a ten-year look ahead.

Benchmarks '64 sought to picture a momentary halt in the course of the developing utilization of the television technology in the processes of education. The picture possesses all the unreality of the acrobat caught in mid-air somersault. The picture tells only a portion of the story. The viewer knows something happened before. The success of the maneuver depends upon what happened thereafter.

So it is with those who know that the television technology has already had a demonstrable impact upon the needs and problems of both formal and informal education. They know it is in mid-air, and educator and technologist alike look forward in anticipation to the fruition of the implementation of an advancing technology into an even more effective application upon the increasing need for more and better education.

Consequently, the second seminar in the Benchmark project sought to assess the movement even in the single year since the 1964 seminar, to identify the philosophical threads which could be expected to guide and govern the advance of education and of instructional technology, to forecast the relationship of educational media to the needs of secondary and higher education in the decade ahead, and to attempt to foresee the applications of advancing instructional technology.

Foresight can hardly be expected to possess the acuity of hindsight, often said to be 20-20. However, to the extent that informed prophesy may approach the ultimate reality, the more rapid may be the realization of the desired educational goals.

EDUCATIONAL PHILOSOPHY AND TELEVISION IN THE DECADE AHEAD

Even those who find in television technology the most hopeful single device for extending and improving education will not claim for it the power to effect all the changes which seem destined for education--that function which seeks to bring each succeeding generation to be at home in the world.

Being at home in the world will be increasingly difficult of achievement as the swift race of turbulent change accelerates and all but obscures the distinction between evolution and revolution. Still, the foundations of education, rooted in the noble design of the American dream, will continue to emphasize the individual and the development of trained intelligence.

A wise and experienced counselor to education and educators sets forth five criteria as being mandatory in the formulation of educational decisions and educational change in the decade ahead:

"1. Improving the quality of individual learning and extending the range of that learning.

2. Broadening the equality of learning opportunity for all individuals.

3. Modifications in the institutional arrangements of education designed to encourage and support educational change.

4. Strengthening individual motivation for continued learning and providing more immediate and assured rewards for current learning.
5. More imaginative and vigorous efforts in education to utilize the resources of time, talent and technology to their full potential."

Television does not pose as the sole instrument of such change, yet it promises to be one of the principal stimulants to desirable change in education. It can be an instrument for new levels of quality in education, the instrument of broadened equality of learning, the influencer of change in mode and method in education, a steady transitional instrument for moving toward fuller utilization of educational resources and in their re-deployment for better educational results consistent with society's demands.

Obstacles to be cleared in achieving maximum application of the potentials of television to educational change are rooted chiefly in misperceptions about television and in the inertia of conventional modes which are comfortable and familiar. The perception that the intricacies of television pose more problems than solutions must be uprooted. The notion that television is for mass dissemination only, must be supplemented with knowledge of its power to individualize instruction. Institutional arrangements which defy effective or efficient use of the new technology must be gently altered to permit the use of television selectively, persistently and centrally in instruction rather than at the convenience of the various pursuits of the conventional educators. Television itself must remain flexible and open to working in combination and in cooperation with other devices and systems for instructional assistance. It must be arranged to supplement the formalities of education today and to take education into homes, schools and elsewhere, wherever needed, at the learner's convenience, be he pre-school or post-graduate.

Lastly, and with emphasis, the eminent and experienced advisor cautions that of all these, the absolute and unwaivering devotion to the quality of excellence in programming is the most important, lest television be merely a pipeline for the delivery of mediocrity to more places. This would be less than a service to education.

Educational television, in short, is not and will not be education itself. It will not alter the fundamental value system undergirding education in this nation, nor will it, alone, effect the changes that will be demanded of education. Its promise rests in what it can contribute to changing education and the arrangements and processes of education in order that education as a function in the society may meet and satisfy the demands of a society which believes in, places its trust in education and, in fact, depends upon it.

TELEVISION AND THE NEEDS OF SECONDARY EDUCATION

Small school, big school, medium-sized school, it makes little difference when any one of them begins to tick off the problems confronting the secondary educational level in the decade ahead. There are numerous variations in the manner in which a problem manifests itself in each type and size, but the problems have a striking similarity.

The need for additional investment in secondary education is a unanimous cry, but today there is a discernable change in secondary school thinking about just what educational resource can be purchased with new infusions of money. Most agree that the conventional notion of hiring more teachers to teach more students or to teach new courses is no longer the obvious and simple solution. For one thing, the teachers aren't there to hire, and they won't be there in sufficient numbers for some time to come. If they are available, can they teach the variety of subjects required in the small and middle-sized schools? If they are prepared to teach that which is needed by the school and the curriculum, what are their chances of being able to keep abreast of the rapid increase in pertinent new knowledge? Can they possibly keep up with the advance in teaching technology and methods?

What about curriculum modernization? The explosion of knowledge not only demands it, but the increasing rate of implementation of new knowledge into applications in day-to-day living promise to out-date curricula more frequently. How can teachers be trained and re-trained to keep pace with the new curricular demands? And what about the wider curricular needs of the high school students preparing for new varieties of jobs and new levels of post-high school education?

Growth of schools in size by reason of reorganization, but also by reason of population shifts and new densities of population in new locations, is a continuing process. Cultural and educational deprivation are not alone the blight of an Appalachia, but they exist in the largest cities, and on the plains as well as on the mountain slopes. Size in major high schools in metropolitan areas now begins to introduce new concerns about the adequacy of personal attention and individualization in the instruction and personnel aspects of the school operations.

Six rather specific ideas emerge from the discussions of knowledgeable secondary school administrators as they contemplate the utilization of television in the decade ahead:

1. Even if the teacher supply were to be adequate, the staff problem of the secondary schools indicates clearly that the supplementation of the instructional resources with the television capability will be needed to enrich instruction by adding to it experienced teachers who could not otherwise be brought into that classroom to assist the classroom teacher or teacher-team;
2. Even should the teacher supply be adequate, the processes for keeping up in subject matter taught and with the advances in teaching method and technology are not adequate without new capability for in-service teaching via television whereby the up-dating process can be brought to the teacher's job site;

3. As local schools insist upon their individuality in scheduling their school days or as the special circumstances of a community, a school or a system may demand varying schedules, the use of television to increase the flexibility in scheduling is clearly within the capability of the instrument;
4. As new problems requiring special educational approaches arise, outside the normal offering of the school for the majority of its students, there is a new appreciation for the capacity of television to supplement the school offerings for small groups and for individuals to help meet particular educational problems, such as providing remedial attention for a broad variety of educational deprivations;
5. At a time when the conventional curriculum of some schools is woefully thin, the need for curricular change and supplementation is accelerating, causing educators to look to television as one method for changing sparse offerings to fuller academic fare and for supplementing basic curricula with those courses of a specialized nature for which few schools could hope to staff;
6. As utilization of educational media increases, school design will be changing in the case of new schools and remodeling in the case of older schools will take place specifically to make better use of television and associated media.

TELEVISION AND THE NEEDS OF HIGHER EDUCATION

The same three words which emerge in discussions of the future problems of secondary education come forth even somewhat more strongly when the conversation is taken up by the college and university administrators. They are: quantity, quality, and money.

The steady increase in the numbers of students attending college now has become a fact of life and a subject which causes little more than a sigh as the total enrollment outlook focuses upon an increase from the current 3.5 million to an estimated 7 million students in 1970. The problems of serving increasing numbers have not been solved, but the fact that there will be increases is no longer a surprise. What does haunt the higher education administrator is the inevitable prospect that higher education will not be able to meet the need for additional faculty without a dilution of the quality and a sacrifice of criteria now employed in seeking quality in faculty.

New numbers of students are not the only factor affecting the faculty shortage. Even though there are not enough new faculty presently or in prospect to satisfy the needs of colleges and universities in staffing current programs, the new and developing programs are increasing the need at both undergraduate and graduate levels. In addition, the demands of research with new infusions of federal and private funds draws the faculty man away from teaching and, thereby, again increases the need for additional faculty.

Thus the problem for the decade for higher education condenses into a simple statement of the problem of providing education for new quantities of students while trying to maintain or improve quality with neither sufficient funds nor sufficient faculty to accomplish the task.

Acknowledging the higher resistances to the utilization of television at the higher education level, the far-sighted see the wider dissemination of the teaching talents of the eminent teacher and scholar with appropriate recognition of his additional contribution to the work of the institution. They speak of inter-campus exchanges of television instruction, of multi-campus television consortium arrangements, of the extension of instructional television into the living situation of the students supplementing the classroom, of the development of wider credit acceptance arrangements between institutions using television, of the development of new kinds of agreements between public and private institutions for sharing and exchanging instruction of a variety of kinds via television, and they foresee statewide educational television systems both on closed and open circuit bases for the broader dissemination of higher educational instruction.

New emphasis on individual study via the capabilities of instructional carrels, including a utilization of television hooked to computers for retrieval and reproduction of previously stored material, may help faculty and student alike to understand that the use of educational media may result in a greater personalization of educational experience rather than depersonalization.

Special opportunities are on the horizon for the branch campus which may, through a television umbilical cord, enjoy academic nourishment of a quality otherwise unattainable there.

For those institutions holding responsibility for community service through adult education and continuing education, television offers an opportunity heretofore undreamed of. As the new leisure era approaches, the demand for adult education continues to increase. The public university can be expected to increase its use of television in this regard, and the area of community colleges will find television broadcast stations capable of establishing communication with the more-or-less specific constituency of its community and thereby being more responsive to the community needs while at the same time making the community aware of the needs and potentials of the institution.

As higher education administrators foresee the problems of higher education in the coming decade, television holds the potential for providing some of the solutions. Despite built-in resistances at the collegiate teaching level as well as the collegiate learning level, the decade will see the suspicions born of the early shortcomings of educational television and the voids of commercial television give way to the realization that the technology may improve the process, maintain or even improve the result, and possibly re-deploy educational resources in a manner to increase the total educational product and its quality as well.

DEVELOPING APPLICATIONS OF TELEVISION TECHNOLOGY IN EDUCATION

How short is a short-range forecast, and how long is a long-range prophesy? When the subject of the forecast is the rate of technological change, the short-range forecaster may be overrun by new developments before he's through forecasting, and the long-range prophet may find himself less a prophet than a herald. And so it is with television technology.

A mild self-consciousness sets in when the man identified with the hardware side of educational television speaks of the rate of development, because he is acutely aware of a technological gap between the present state of the technology and the slow pace of the developing utilization of television in education. He is the least bit reluctant to forecast the advance of the television technology in the next ten years, lest he somehow widen the gap by the mere mention of new capabilities of the hardware of communication when the present capability is but partially used.

In fact, the hardware-oriented, although they have been quite aware of the powers of educational television to spread mediocrity at the same rate as it can spread excellence, are now beginning to speak at greater lengths on program quality. On the other hand, the teachers and professors who have ill-disguised their apprehensions about television in education are beginning to feel at home with the nomenclature of educational television and, now and then, admit that the machines might add something to the educational process.

In the decade ahead there is reason to believe that what have tended to be two unrelated monologues might become a dialogue between the teachers and the television communicators who assist the teachers.

Those concerned with television technology in relation to education speak at much greater lengths, as they attempt to look a decade ahead, about the development of new systems and combinations of systems based on what is already known than they do about developments in the improvement of the machinery itself. Yet, they speak, too, of the discernible trend toward combining educational media to enhance the effectiveness of all such educational tools and to bring out the fullest capabilities of television in education. Color television in education is mentioned with thinly veiled excitement as the color technology moves rapidly forward and communicators and educators have visions of the additional educational power to be added by the color dimension in the next ten years. Some educational color television is on the air even now as the multi-media approach, using color films and a color film chain, generates color transmission, though the capability to originate color television waits the acquisition of more expensive color camera equipment by most ETV stations.

The decade will see new combinations of available technology to solve specific problems: the instructional television fixed service (ITFS) or 2500 megacycle band multi-channel transmission to enfold a school system or a group of institutions in close geographic proximity in more or less point-to-point transmission of instructional television; the development of low power UHF stations for community and instructional services; the spreading of community and instructional services by translators or repeater transmitters; the interlocking of closed and open circuit systems and even with community antenna systems (CATV) for varying combinations of electronic highways by which to reach multiple destinations. Some point to existing interconnections of educational stations and envision increasing networking across many state lines and even to regional and national stringing together of educational stations.

The increasing development of UHF educational stations is forecast for the decade with the prediction that virtually all homes will be able to receive UHF signals within five years. As closed circuits increase in education, some fear the diminution of in-class instruction via open circuit while others look forward to multi-channel educational stations, some of which are now in existence because a single channel could not meet the current educational demand.

In part, because the great increase in students first focused the attention of education upon the possibilities of television for extending instruction to greater numbers in more reception places, the thinking about television has been skewed toward a mass communication concept exclusively. Coupled with teacher apprehension the "mass" idea gave impetus to the notion that television necessarily "depersonalized" education. In the decade ahead, the pendulum will swing toward a better balance as more experimentation will be done on using television for independent study. The individual student will have available a combination of media, with television a principal ingredient, through which he may command the playback of yesterday's lecture, the retrieval of library information or of some other instructional material for study or review. He may find these in a handy study carrel or even in his dormitory room. The emphasis will be on the students' personal use of a variety of technologies in combination under teacher direction supplementing that which the teacher and the class participation provide him.

Literally and figuratively, the technology may well go "way out" in the next decade as the far sighted see the launching of educational television satellites connecting points around the globe and laser beams, carrying hundreds of television channels at once, delivering in combination with satellites, for instance, educational information from points around the world to any other point on the surface of the earth.

Clearly the improvements in the technology of storage and retrieval of instructional materials by electronic methods for later use is already a fundamental capability in the educational use of television. All signs point to increasing use of the recording and playback capability and hopefully for increased standardization in the technology to better encourage the interchange of instructional, cultural and informational materials. Library reservoirs are now designed to encourage, evaluate and select the best efforts in creating the materials of educational television and to make them available wherever they are needed.

Hence, there is little reason to believe that the technological advance in television will slow down, and there is some reason to believe that utilization of the new technology may speed up. Much of the decade may be spent on consolidating the gains television has offered education and reducing the gap between the technology and its use in meeting more specifically the pressing and immediate problems of education.

BLENDING TECHNOLOGIES FOR INSTRUCTIONAL IMPROVEMENT

Educational television will be thought of as an educational "blender" integrating the presentation of all communications media. Its capabilities for distributing educational presentations can either decentralize the locus of educational opportunity or bring together groups and individuals for sharing common educational experience.

These paraphrased contentions of one of the most clairvoyant prophets of educational technology succinctly forecasts the likely trend of the decade ahead for educational television.

The blending concept implies a "multi-media" and cross-media" approach to the presentation of educational subject matter. The power to deliver wherever and to whomever needs or desires the educational experience clearly portends changes in many of the educational arrangements for learning. All this will not come to pass with a flick of the switches, for the prophets are well aware that there is much to be done at both ends and in the middle, as well, but it will come to be.

There is much to be done at the input end of the television pipe, in the preparation of the information to be transmitted. Continuous new revelations from research about the learning process will be coupled with an analytical approach to the kind of behavioral change desired. More specific learning objectives will be planned into a program for effective instruction. Then the capabilities of the various elements of educational technology will be discreetly assessed and evaluated to determine the devices best able to convey the particular information. And these will be combined into systems, all preceding the transmission of the first sound or picture.

In the middle, the technological advances in the creation of machines and combinations of machines for educational communication will continue even, perhaps, to the point of a technological inundation requiring a sifting and selecting from a range of choices which may well defy intelligent selection. Confusing as all this may become in the next decade, and as susceptible as the vast array of new tools may be to critical reaction from conventional and vested interests, the prophets see the emergence of systems which will effectively result in better teaching and better learning. The transmission pipes, thus, will be carrying carefully analyzed, planned and programmed educational information designed to effect specific learning experience presented through a system of devices best suited to accomplish the learning objective.

At the other end of the pipe, the conditions under which the learner consumes the educational communication will be changed and designed more specifically to maximize the experience and the learning result. Facilities in schools, colleges and elsewhere, in classrooms, dormitories, libraries, and instructional centers will be remodeled and redesigned to increase independent consumption, not just to take in but to give back, to test, to explore and to react as feedback and response mechanisms are incorporated to provide the learner with a dynamic, participating experience.

New administrative arrangements will evolve designed to bring the learners, the teachers and the new tools of instruction into relationships which make each more available to the others. The stirring in of new educational technology will influence the new educational structures with regard to room size, room shape, media capability, lighting, ventilation and other factors bearing upon the achievement of maximum communication potential. The deployment and control of media machines and media materials will be administratively facilitated to provide easy access, quick service, media counseling and advice, and manufacturing capability to meet the teachers' needs, operating technical assistance when needed, all designed to assist the teacher and the student in the use of the new tools and materials.

The specter arises with talk of "systems" and "programing" and "prepared materials" of a rush toward national or regional materials prepared at some central place, by a few "experts" and fed into the pipelines much as the petroleum pipelines deliver their products over the nation. It could, but it need not happen.

The teacher remains central to the process though his role, the forecasters agree, may turn somewhat more toward that of a "director of learning" than that of the deliveryman of limited information with limited assistance. Rather the teacher will have at his command materials in a variety of forms from which to select and program into his own course. Some predict that, at the collegiate level, the experts of the larger universities will produce more of the materials for the educational media while other colleges and universities will use and evaluate their efforts as well as contribute some materials themselves. At the elementary and secondary levels, and, as likely, at the collegiate level, too, regional centers will be established to provide educational media services and assistance in the design and creation, storage and distribution of instructional materials. The forerunners of these centers may be in embryo now under various provisions of recent federal legislation. New library concepts and bibliographic service and control will be developed to provide ready identification and location of materials designed to achieve specific instructional objectives.

What about manpower? Teachers in training will receive substantially more experience with the new tools through learning with them and about them in the process of preparing for teaching. In-service training will increase through greater use of the media to instruct those who will use the media to instruct. Teachers at all levels will learn by building materials for media use in programing their own courses. As one forecaster concluded, even in a decade the machines may still be expected to be more sophisticated than those who will use them. Still, during that ten-year span, the focus of the users attention will have moved from the problem of selecting a single medium to that of blending educational media components into a system for the accomplishment of a task which has been analytically programmed for maximum results in terms of what is then known about how learners learn best.

CONCLUSION

The Subcommittee on Television of the Commission on Research and Service of the North Central Association of Colleges and Secondary Schools conducted the Benchmark Seminar, 1964, to survey and establish the benchmarks after ten years of using television as an educational medium. The broad conclusion was that television had entered into education, had shown its capability for extending education and educational opportunity and that it could show educational results not significantly different than conventional teaching could claim by the same measuring sticks. But educational television had not become "of" education. It had not been embraced by education though some daring pioneers ventured the thought that in some ways and in some subject matters television might be able to improve instruction as well as to extend education.

Subsequent critiques of the Benchmark Seminar placed the broad dimensions on a problem in the implementation of television in education. It was simply that relatively little could be accomplished in the use of educational television until an institution had committed rather substantial educational funds to investment in the tools of television and had, in part, determined that the institution or school system could and would put television to use in its educational endeavors. Until then, the individual teacher could do little even to experiment with television. It seemed equally clear that policy and administrative decisions of such magnitude would require more and better information concerning what might be expected from such an investment and cost approximations for whatever variety of television system might be needed or desired. With the aid and counsel of knowledgeable television and fiscal management men, the Subcommittee further delineated the problem in providing a cost approximation instrument for the use of television in education and has suggested rather specific study approaches to the development of such cost information.

The second major seminar in the Benchmark project brought together active and able school and college administrators with acknowledged leaders in the theory and use of television and other educational media. One group was to set forth current and future dimensions of the demand for education from the institutional system of the nation and the other to describe and project the foreseeable developments in the technology of educational media and to speculate upon how the technology might help manage and satisfy the future dimensions of educational activity.

They foresaw changes in the size and nature of the demands the society would expect from education and changes in the structure of education in the next decade. The tools of education, they forecast, would possess greater capabilities than educators would learn to employ in the decade. Still, with continual broadening of the use and experimentation with educational television, with better pre-service training of those who will use instructional media, with increasing attention to the ways in which wide varieties of quality instructional materials may be easily available for use in a blending of the most suitable media, and with the building of a new awareness and flexibility among the policy makers with respect to the deployment and redeployment of educational resources in combination with new educational technology, the decade may see television not alone "in" but "of" education.

The seminars left an optimism among the conferees with an occasional expression of doubt that the optimism might be the product of the experts talking only to themselves. The object, however, was to determine what could honestly and logically be said to educators to provide them knowledge and perspective on the potentials for the use of television in education today and ten years hence. And on re-examination the optimism held up with respect to the powers of the instrument and the state of the science.

The availability of leadership, the presence of innovators in education, and the willingness of education to change its conventions in order to meet new educational demands with new levels of quality and quantity will not only determine the rate of implementation of the television technology into the educational process but as well the question of whether or not the demands confronting education will be met at all in the decade ahead.

PART V

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

That television technology has attained a place in education and is making a solid contribution and that in the decade ahead it will become much more deeply involved in the processes of education might have been concluded without the labors of the Benchmark and projection seminars. However, both seminars have gathered evidence and testimony from the most experienced and the most knowledgeable to support the conclusion that television in education is no longer simply an experiment in educational communication.

The seminar experience has given an additional impetus to the purposes of the sponsoring Subcommittee on Television. In the work of assessing the current place of television in education and forecasting its future uses, new emphasis was found for the potential of the television technology in the solution of some of the major problems and concerns of educators now and in the foreseeable future. So pressing are the problems of education and so promising are the potentials of television applied to education that the findings urge upon the Subcommittee an obligation to accelerate and increase its efforts toward dissemination of the information at hand to those who might be expected most to need it.

Those who need to know are not alone the teachers or the students or the administrators in American education. Rather, an understanding and a perspective is needed among many groups involved in the educational enterprise lest opportunities be lost, lest educational problems remain partially or wholly unsolved and lest both the quality and quantity of educational opportunity fall short of the need.

The Subcommittee is moved to set forth its conclusions in an enumeration of the functions of television then to relate these functions to the problems, needs, circumstances, attitudes and concerns of those groups-in-interest to whom the full utilization of television in education has some special significance.

The enumeration of the functions of television would seem to be an unnecessary, elementary exercise were it not for the fact that the majority experience has been with television employed for other than educational objectives. This experience for many has successfully obscured the fundamental nature of television, so successfully that one of the problems in seeking even experimental use of the capabilities of television in education is that of clearly establishing its fundamental capabilities for those who need a basic understanding of television.

Thus, with some repetition and some redundancy, the Subcommittee would conclude that:

1. Television is a medium for simultaneous translation of light and sound into signals which can be transmitted to receiving apparatus there to reconstitute the same light and sound patterns which it originally translated.
2. This capability enables television to carry from one place to another whatever the eye can see and the ear can hear, indeed, even the microscopic and the inaudible, to wherever such stimuli are desired to be seen and heard.

3. Television is a medium for instantaneous communication by sight and/or sound.
4. Television can translate and transmit light and sound from original stimuli, conveying the event as and when it happened, and it can translate and transmit light and sound previously captured and stored by other media such as film and magnetic tape.
5. Television can translate and transmit light and sound into a recording and storage device for later recall and replay, again and again, at any time as needed or desired, a few seconds or years later.
6. Television does not discriminate; it translates whatever the camera eye sees, whatever the microphone hears; it does not interpret the purpose nor the quality of what it sees and hears; it can transmit that which is judged to be mediocre as rapidly and as effectively as that which could be called excellent.
7. Wherever its receiving apparatus can be placed within reach of its signals, television can deliver its communications.
8. Television can distribute communication across a room, across a nation or, indeed, around the world.
9. Television can distribute communication to an individual for exclusive, personal consumption, to millions of individuals, or to any number in between, for a shared communication experience.
10. Television can communicate stimuli which are intended and designed to be formally or informally educational, across the

room or around the world, to one or a million, instantaneously, or repeatedly.

11. Television can not transmit stimuli which appeal directly to the senses of taste, touch or smell, nor can it recreate the full range of interaction between teacher and student in the physical presence of one another.
12. Yet, television can with dependence upon its special capabilities, transmit stimuli designed to be educational with comparable learning results in most of the subject matter areas into which knowledge has been compartmentalized for orderly and manageable instruction.

CONCLUSIONS

With respect to the students of today and a decade ahead, the Subcommittee would observe that:

1. There will be many more students to be taught by the schools of the nation.
2. There is increasingly more for them to learn if they are to be at home in their world.
3. They will be distributed and grouped in increasingly larger communities, larger schools and larger systems of schools.
4. Among them will be large numbers who will have been disadvantaged culturally, socially and economically.
5. They will have the full range of human capacities to learn and greater need for learning.
6. They will learn at differing rates and require different levels of instructional stimulation and challenge.
7. They will be motivated to learn in widely varying degrees, some submerged in the complexity of an increasingly mass society, others exhilarated by the challenges of increasingly specialized knowledge.
8. They will need to learn more on their own, independent of formal, personal instruction.
9. They will need to learn how to learn from a broad new spectrum of methods and devices.

10. They will, as they pass the ages of the formal instructional system into the responsibilities of adulthood need to continue to learn, to unlearn and to re-learn throughout their lives for their own economic, cultural, social and political well-being and that of the society they will comprise.

With respect to the students, the Subcommittee would conclude that television can and in the future is expected:

1. To bring improved formal instruction to the student through its capacity to bring together a variety of learning experiences which could not otherwise be brought to any single classroom.
2. To bring high quality formal instruction to students demographically, geographically or economically so situated that either no such instruction or only inferior instruction could otherwise reach them.
3. To bring to bear upon the student's learning the total impact of a new range of educational technology now developed and more to be available in the future.
4. To bring a broadened range of educational experience to the student through broadened curricula in his schools.
5. To bring to the student more effective means of independent study through systems of storage and retrieval by electronic means.
6. To bring to the student, of any age, educational experiences and learning opportunities in worlds of knowledge which for a

variety of reasons might not otherwise be within his reach.

7. To place before the student new reasons and motivations for learning by introducing him to wider horizons, to new opportunities in the world of work, and to broader informational resources.

With respect to the teacher today and in the decade ahead, the Subcommittee would observe that:

1. There will be a shortage of qualified teachers at all levels of instruction.
2. There will be a need to provide and extend better quality instruction to more students in more places to the point that current conventional approaches will break down or be maintained at a diminishing level of quality.
3. The demand upon the teaching resources of the nation will be so heavy as to require that all supplemental instructional aids which can be made available be fully utilized.
4. The rapid change in methods and the overwhelming increase of knowledge will place additional burdens upon teachers to update themselves by new means through formal, in-service programs specifically designed to teach the teachers.
5. Higher specializations required to master the knowledge which must be taught will encourage combinations and teams of specialists for the best learning results.
6. The demand and need for quality teaching will require that the "housekeeping" and "presenting" chores and functions be

stripped away from teaching duties to permit the application of the teacher's time to more diagnosis, counseling, planning and directing of the individual learner--that the teacher may be more efficient employing her talents as a "director of learning" more than a "presenter of information."

7. Teacher apprehension and fear of deprofessionalization and technological displacement will be slow to dissolve except as special programs of reorientation and reassurance are provided.
8. Appropriate compensation arrangements for the extended and repeated use of the teacher's talents must be worked out through appropriate personnel and budget policies.
9. Teacher training institutions must prepare teachers to utilize the new instructional tools and materials in their direction of and participation in the new teaching systems.
10. Conventional teaching will change of necessity and in changing threaten only the unqualified teacher.

With respect to the teacher, the Subcommittee would conclude that television can and in the future is expected:

1. To demonstrate and reinforce the fact that at all levels the teacher will remain at the central focus of all formal instruction and learning whether via television or not.
2. To encourage the teacher to understand television as an instrument of educational communication.
3. To demonstrate further to the teacher that television is not a device for his technological displacement but for introducing

new opportunities for improved teaching and for extending the influence of the teacher upon learning.

4. To enable the teacher to bring together the full impact upon his teaching of the conventional teaching tools and the new and developing media and materials for instructional improvement.
5. To expand the function and the influence of the teacher through his direction of the learning experience for the individual student, employing many supplemental resources for both independent and group study.
6. To enable the teacher to up-date his knowledge and his skills through the use of television for continuous in-service training.
7. To enable the teacher to keep abreast of curriculum development and to contribute to its development through in-service subject matter instruction of teachers.
8. Through utilization of the recording and storage capability of television to re-deploy the teacher's time and talent devoted to teaching and other professional pursuits.
9. To prepare the teacher-in-training to use efficiently the television technology and to better employ the other educational media for more efficient and effective instruction.

With respect to the policy maker and the administrator now and in the decade ahead, the Subcommittee would observe that:

1. Qualified teachers, the major instructional resource of any institution or school system, will be in short supply and will command increased compensation.

2. New efficiencies will be needed if the finances of education are to be stretched to meet the demands for education.
3. Conventional approaches to teaching do not promise either the quantity nor the quality of teaching the educational constituencies and the times demand.
4. New knowledge will increase and demand curricular change at all levels.
5. Change in methods and the increase in knowledge will place new burdens and obligations upon institutions to provide in-service training opportunities for teachers in subject matter and in the utilization of supplemental aids.
6. Increasingly instructional resources will be shared between institutions and systems possessing the necessary arrangements and systems for sharing.
7. The magnitude and sophistication of television technology will require carefully considered commitments of institutional resources before teachers will be able to gain the advantages of the new technology for extended and improved instruction.
8. The use of new instructional technology will require a systems approach with proper attention to the place and function of each component and its relationship to procedure, space, budget, staff and other factors of institutional operation.
9. Increasingly portions of the obligation to meet the demands for life-long learning will fall upon the formal systems for education both to prepare the student for a life of learning and to provide a substantial part of the opportunities for such learning.

10. The task of informing and encouraging educational constituencies to support the changes and improvements in methods of instruction will require greater attention and effort on the part of educational leadership.

With respect to the policy maker and the administrator, the Subcommittee would conclude that television can and in the future is expected:

1. To demonstrate further that television has unique capabilities for extending instruction to places and to people in a school, a system or a community where it might not otherwise be extended by conventional educational methods.
2. To demonstrate further with increasing emphasis that television has the capability for influencing the improvement of instruction.
3. To demonstrate further that television will permit and encourage the deployment of such educational resources as space, time, teaching talent and educational materials in more effective and efficient ways.
4. To permit the utilization of the best in teaching wherever located to supplement and to work in concert with classroom teachers for more effective teaching and learning.
5. To permit the utilization of supplemental materials from throughout the world in classrooms where such experience could never be found otherwise.
6. To encourage the combinations of teaching talent in teams of teachers each bringing his best to the joint effort.

7. To magnify and extend simultaneously to many, learning experiences which normally could be experienced only by a few at one time.
8. To encourage the broadening of curricular offerings which otherwise could not be afforded and, thereby, to help meet the demands for teaching new knowledge.
9. To help in meeting teacher shortages by extending the influence of individual teachers or by supplementing with the teaching of others via television.
10. To encourage greater attention to individual needs of students through the recording, storage, replay and repetition of educational experiences for the convenience, review and re-study by the student.
11. To encourage the integration of educational media resources with television for the enhancement of the effectiveness of all.
12. To demonstrate the utility of television in the operations of the institution through in-service training, orientation, administrative communication, data processing, and other operational needs.
13. To demonstrate clearly that the use of television in education requires an institutional commitment of funds and top educational leadership before it can be used effectively, efficiently and economically.

14. To prove that increasingly television holds substantial potential for assisting policy makers and the administrators in education in carrying out their obligations to provide educational opportunity in greater quantity and quality in the years ahead.

With respect to the educational communicator today and in the decade ahead, the Subcommittee would observe that:

1. The advent of television technology brought a new focus upon the utilization of educational media of all varieties for the contribution they might make to the extension and improvement of instruction.
2. To date the utilization of the technology has demonstrated the power of television to extend and distribute instruction more than its capability to contribute to the improvement of instruction.
3. In the decade ahead, it is likely that the technology will advance and remain more sophisticated than the capacities of the users to employ the full technical capability.
4. The inertia of conventional methods and the comfort and convenience of conventional teachers at all levels, but particularly at the secondary and collegiate levels, remains the most difficult obstacle to the implementation of television technology into the educational processes.

5. The place of the television specialist in education is not yet one of full acceptance as some educators dismiss the specialist as a gadgeteer or an invader in the educational compound, and the failure of some television specialists to understand their relationship to the teacher continues to complicate and retard the use of television in education.
6. The appropriate academic preparation of the educational television specialist and those who will be the technical and operating personnel of educational television systems will evolve into more specific and specialized patterns in the decade ahead.
7. Concern for the economics, efficiencies and the effectiveness of instruction via television must become as much the responsibility of the television specialist as the teacher, department head, dean and central administrator, and techniques and methods of study and analysis should be refined and tested.
8. Creative and innovative integrations of the capabilities of multiple media will require greater cooperation and coordination between television and the older educational media.
9. Cooperative and collaborative effort will be needed in the creation and full utilization of storage and distribution systems for sharing instructional resources within and between institutions.

With respect to the educational communicator, the Subcommittee would conclude that television can and in the future is expected:

1. To become the "blender", bringing together in the most effective combinations for the educational task at hand the media and materials best suited to the task.
2. To require that those who assist teachers in the utilization of television be better prepared with broader academic foundations related to the application of television to the teacher-learning process.
3. To require the preparation of an "educational media technician" trained in the operation, maintenance and service of educational media devices utilized for instructional purposes.
4. To require greater attention to the development of systems of television and other educational media designed for specific instructional objectives and other educational communication.
5. To encourage continuing attention to the technological developments in television and other media in search of improved instruction.
6. To encourage the development of facilities for the creation of instructional materials and aids in cooperation with teachers to accomplish specific teaching objectives.
7. To require greater attention to methods of analysis and study by which the impact upon learning and upon the deployment of institutional resources can be assessed and provide better bases for institutional planning.

RECOMMENDATIONS

In order that the application of television to education may be further encouraged, implemented and accelerated, the Subcommittee recommends the following:

1. That the development of interpretive material based on the findings and conclusions of the seminars go forward for dissemination by appropriate means, particularly to those whose responsibility it is to make policy and administer the educational institutions and systems of the region included in the North Central Association of Colleges and Secondary Schools and elsewhere.
2. That a project be conducted to develop a manual on costs of television in education for use by policy makers and administrators in considering the use of television for the achievement of the educational objectives for which they may be responsible.
3. That proposals be developed for projects designed to study and further understand the impact of the utilization of television upon the systems and procedures, the deployment of educational resources, the economics, and the total operation of institutions and systems of institutions.

4. That projects designed to develop standard accounts and accounting practices in the operation of educational television stations for the purpose of achieving understanding of the relationship of expenditures to the functions of such stations be encouraged.
5. That projects designed to achieve the highest performance standards in educational media equipment, primarily in the field of television recording be encouraged to the end that investments of educational dollars in such equipment will provide the broadest possibility for exchange and utilization of instructional materials.
6. That development of guidelines and standards of practice in recognizing institutional and teacher rights in instructional materials developed for use in educational television be encouraged.
7. That encouragement be given to the development of facilities for the creation and development of instructional materials and aids for use in educational television.
8. That encouragement be given to projects designed to create workshop and clinic situations in which teachers at all levels may be introduced in depth to the potentials of the educational media to improve instruction.
9. That teacher training institutions be encouraged to provide the teacher in training with knowledge and experience in the utilization of television in instruction and in the training of students to make maximum use of instruction via television.

APPENDICES

APPENDIX A

MEMBERS
Subcommittee on Television

Milton W. Bierbaum, Supt.
School District of Maplewood-Richmond Heights
Maplewood, Missouri

Donald G. Emery, Supt.
Shaker Heights Public Schools
Shaker Heights, Ohio (Resigned 1965)

Robert E. Fleming, Principal (Retired)
South High School
Youngstown, Ohio

Elizabeth Golterman, Director
Audio-Visual Education
St. Louis Public Schools
St. Louis, Missouri (Resigned 1964)

Richard B. Hull, Managing Director
Telecommunications Center
The Ohio State University
Columbus, Ohio

Jack McBride, Director
Television and KUON-TV
University of Nebraska
Lincoln, Nebraska

Charles McIntyre, Director
Bureau of Instructional Resources
University of Illinois
Urbana, Illinois

Lawrence E. McKune, Assoc. Prof.
Continuing Education on Television
Michigan State University
East Lansing, Michigan

George Parkinson, Director
Milwaukee Vocational and Adult Schools
Milwaukee, Wisconsin

Ex Officio Member

J. Fred Murphy, Treas., NCA
Principal, Broad Ripple High School
Indianapolis, Indiana

Project Staff

Dean C. Cannon (Coordinator)
Institute for Education by Radio-Television
The Ohio State University
Columbus, Ohio

James R. Jordan (Editor)
Assistant to the President for University Relations
Indiana University
Bloomington, Indiana

Leroy E. Hull (Research Assoc.)
Director of Institutional Research
Indiana University
Bloomington, Indiana

Martha Haueisen (Secretary)
Telecommunications Center
The Ohio State University
Columbus, Ohio

APPENDIX B

HISTORY OF THE SUBCOMMITTEE ON TELEVISION

This is a report of the work done by the Subcommittee on Television, Committee on Current Educational Problems, Commission on Research and Service, North Central Association of Colleges and Secondary Schools.

The Subcommittee on Television, in relating itself to some of the problems of educational television during the past decade, believes that a documentary record of its activities would not only be proper as a part of this project but, indeed, a valuable addition to any research looking toward any study of educational television in the decade ahead. As a result, on July 23, 1965, the Subcommittee agreed:

> ". . . that a member of the Subcommittee be delegated and authorized to outline and document the activities of the Subcommittee from its original appointment to the present. A written report is to be prepared for inclusion as an Appendix in the Project Report, as well as being presented in capsule form at the Seminar."

INTRODUCTION

The North Central Association was founded in 1895 on the concept of service to member institutions. This concept has always been the basic thought in all official actions of the Association coupled with its counterpoint concept of progressive thought and action with respect to educational policies and practice.

Calvin O. Davis, long time Secretary of the Association and later Editor of the _North Central Quarterly_, states the basic ideas for future action of the Association. One of these ideas he labels _Prestige_ and states: "The Association is the most generally recognized standardizing agency for high schools and colleges in the north central states--if indeed it does not rank first in prestige in the entire United States. Recognition by the North Central Association means, therefore, in the educational world, the same as high ranking by Dunn and Bradstreet in the field of finance and business."[1] And, again, we find under the caption Association Aims the following: "That the aims of the Association are, to a large degree realized, is evidenced by the steady growth of the Association in territorial accessions, in the number of affiliated and accredited schools and colleges, and in the power and prestige exercised in respect to educational policies and practice throughout the country."[2] Both of these statements are pace-setting pronouncements for future action and are borne out by the activities of the Association from its beginning with a handful of 30 colleges, 52 secondary schools, and 31 individual memberships--to its present membership in 1965.

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[1] _NCA Quarterly_, Volume 1, June 1926, p. 195.

Davis rendered another service by his meticulously detailed accounts of happenings. They are so concise, clear and accurate that it is easy to reconstruct the story of the Association. After the Quarterly was founded in 1926, with Davis as Editor, many articles were published telling of the work and background of the Association. From these articles one can accurately reconstruct the early days--1895-1926--of the life and thinking of the founders who carefully laid the background and foundations of the Association.

THE TELEVISION COMMITTEE

In the early 1950's it seemed evident to a growing number of people that television as a new communications medium could be of exceptional importance to educators. This was particularly true in connection with foreseeable problems for the decade ahead. Increasingly it appeared that education through television or with the assistance of television might be improved in a number of respects.

At a meeting of the Executive Committee in Chicago, Illinois, on June 26-27, 1953, a committee was named: "to inquire into the status of television in education and, from time to time, to bring to the attention of member institutions pertinent information in this regard."[3] At that time the committee was made directly responsible to the executive committee of the Association. A year later it was placed in that part of the Association framework which was designated as a Subcommittee of the Committee on Current Educational Problems of the Commission on Research and Service.

Dr. Armand Hunter, Director, Television Development, Michigan State University, East Lansing, was the first chairman of the committee. He resigned in 1953 after its first meeting and Dr. Donald E. Emery, Associate Dean, College of Adult Education, The University of Omaha, Omaha, Nebraska, was appointed Chairman to succeed Hunter. Emery was Chairman for six years. He was succeeded in this position by Richard B. Hull, Managing Director, Telecommunications Center, The Ohio State University, Columbus.

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[2] Ibid., p. 136.

[3] Minutes, NCA Executive Committee, Chicago, Illinois, June 26-27, 1953.

The membership of the Subcommittee has been fairly constant. One principle for the composition of the membership has always been kept in mind: representation from secondary schools and higher institutions of education; involvement of professional educational television personnel; and an administrator and a classroom teacher included, if possible. This Subcommittee has been kept at relatively small size and has been successful in keeping a balanced variety of membership that represented all major interests.

The following list of Subcommittee personnel shows that this goal has been constantly the basis for committee membership: (Members with an asterisk (*) before their names were charter members. Names are arranged alphabetically and date of service are given.)

Milton W. Bierbaum, Superintendent, School District of Maplewood, Richmond Heights, Maplewood, Missouri. 1964 to date.

*Leslie Brown, Dean of Administration, Cleveland College, Western Reserve University, Cleveland, Ohio. Resigned 1961.

*Thomas Connolly, C.M., Associate Professor of Philosophy, DePaul University, Chicago, Illinois. Resigned 1953.

*Donald Emery, Associate Dean, College of Adult Education, The University of Omaha, Omaha, Nebraska. Chairman, 1953-1959. Later, Superintendent of Schools, Shaker Heights, Ohio. Presently Superintendent of Schools, Scarsdale, New York. Resigned 1965.

Clifford Erickson, Dean of Television Instruction, Chicago City Junior College, 1961-63.

*Robert L. Fleming, Principal, South High School, Youngstown, Ohio. Retired. 1953 to date.

Elizabeth Golterman, Director, Audio-Visual Education, St. Louis Public Schools, St. Louis, Missouri. 1961-64.

*Ora Heller, Director of Radio Education, Flint Public Schools, Flint, Michigan. 1953-54.

*Richard B. Hull, Director, Radio-Television Service, Iowa State College, Ames, Iowa. Currently, Managing Director, Telecommunications Center, The Ohio State University, Columbus. 1953 to date. Chairman, 1959 to date.

*Armand L. Hunter, Director, Television Development, Michigan State University, East Lansing. Chairman 1953. Resigned 1953.

*Robert Johns, Executive Assistant to the President, Purdue University, Lafayette, Indiana. 1953.

Jack McBride, Director of Television and Station KUON-TV, University of Nebraska, Lincoln. 1961 to date. Vice chairman, 1964 to date.

Charles McIntyre, Director, Instructional Resources, University of Illinois, Urbana. 1964 to date.

*Lawrence E. McKune, Television Coordinator-Producer, Michigan State University, East Lansing. 1953 to date.

Wanda Mitchell, Director, Television Project, Evanston Township High School, Evanston, Illinois. 1956-60.

George Parkinson, Director, Milwaukee Vocational and Adult Schools, Milwaukee, Wisconsin. 1964 to date.

*J. H. Shackelford, Director of Public Relations and Assistant to the President, Butler University, Indianapolis, Indiana. 1953-54.

The Ex-officio members of the committee have been the Chairman, Committee on Current Educational Problems; Chairman, Commission on Research and Service; and J. Fred Murphy, representing at all times the officers of the Association, and currently serving as Treasurer of NCA.

Staff:

1960	Pilot Conference, The Ohio State University, Coordinator--David Parker, The Ohio State University. Editor--Thomas Clark Pollock, New York University, New York City.
1961-62	The Dissemination Conferences. Coordinator--Raymond C. Giese, The Ohio State University, Columbus.
1963-65	The Depth Seminars. Coordinator--Dean C. Cannon, Institute for Education by Radio-Television, The Ohio State University, Columbus. Editor--James R. Jordan, Assistant to the President for University Relations, Indiana University, Bloomington. Research Associate--Leroy Hull, Director of Institutional Research, Indiana University, Bloomington.
1960-65	All Projects. Secretary--Martha Haueisen, Telecommunications Center, The Ohio State University, Columbus.

The Subcommittee on Television has had but one objective. It has been the reason for every meeting, every seminar, every conference, and every publication. This reason was inquiring into every facet of television in education, thus placing the Subcommittee in a position to pass to member institutions "pertinent information" and findings. This objective has resulted in searching out those persons best informed about the future development of educational television, collecting their findings and publishing these findings in special reports. The Subcommittee's desire has been to help those in several thousand institutions to understand better what has been happening, what has been productive, where disappointment, difficulties and failure have occurred, what seems to be the form of things to come, how TV is used in teaching, how it is used technically, what are its implications for education, and where can reliable information be secured.

The Subcommittee has from the very beginning been an active committee. Questionnaires have been employed to feel the pulse and find a point of embarkation for certain projects and studies. The Subcommittee has provided a discussion group on some phase of television at each annual meeting of the Association. This has become a valuable method of information dissemination of Subcommittee findings and activity.

In its first report to the NCA Executive Board of June 26, 1953, The "Committee on Television" stated that: "the NCA member schools have a direct responsibility to study, experiment with, and use the medium of television for educational purposes and the fulfillment of educational values."[4]

More than a responsibility--television as a medium for education should be viewed as an opportunity for all educators and a challenge to the profession to identify the ways by which the benefits of education for all citizens may be extended most effectively to the in-school and out-of-school population.

Formal educational experiences have been the primary instruments causing a systematic change in the behavior of a society. The mass media of communication, and especially television, are recognized as a means by which behavior can be and is changed. Accordingly, if educators are charged with the constructive change and development of behavior and if television is of demonstrable value in stimulating change in behavior, it appears mandatory that the two become intimately associated in the interest of furthering the purposes of education.

The Subcommittee accepts as its responsibility: (1) the dissemination of information concerning practices and findings in the broad field of educational television; (2) the encouragement of experimentation and evaluation with the medium by member schools of the North Central

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[4] Ibid.

Association; (3) the creation of a concern for high standards of employing the medium consistent with findings; and (4) the recommendation of standards of performance to the NCA Executive Board as they may pertain to accreditation practices.

Dissemination activities of the Subcommittee have taken a variety of forms. One of the first activities was to set forth in 1954 the statement of a tentative set of ground rules for using this medium in connection with granting credit for courses. This was reported in "Telecourses for College Credit."[5] This report is the only official NCA statement on the subject of television and accreditation.

THE NATIONAL COMPENDIUM OF TELEVISED EDUCATION

A collection of pertinent information concerning the use of television in education was begun in 1948 by Lawrence E. McKune. This has continued throughout the years and Volume 12 of the Compendium of Televised Education was published in September, 1965.

Dr. McKune has been a member of the Subcommittee from its very beginning and started gathering such data as part of his doctoral research. Early in 1953, at a meeting of ETV personnel in Atlantic City, it was suggested that McKune's report be bound in some way and made available to personnel who needed the information on an annual basis. This was done and the data have been published annually.

SCHEDULE OF DISSEMINATION ACTIVITIES

Dissemination is the action program of the Subcommittee on Television. The following indicates the scope of this activity.

1954--March. Annual Meeting. The Subcommittee conducted a discussion period on the topic, "What is the Role of Television as a Vital Factor in Education." Consultants in addition to members of the Subcommittee were George Jennings, Director of Radio, Chicago Public Schools, and I. Keith Tyler, Director, Radio-Television Education, The Ohio State University, Columbus.

--October. Published in the North Central Quarterly, a report on "Telecourses for College Credit." In this report the Subcommittee derived a statement of tentative rules about the relation of using this medium for instruction in connection with granting credit for courses. Adopted by the Executive Committee, it stands today as the only official NCA statement on the subject of television and accreditation.

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[5] NCA Quarterly, October, 1954.

1955--February 17-20, October 7-9. Subcommittee held two sessions to provide groundwork for a future plan of action to meet the needs of the schools. During this time each member gathered materials from schools using television through short questionnaires.

1956--April 11. At the annual meeting, Chairman Emery made a report of the activities and plans of the Subcommittee to the general meeting of the Association and a camera tour of WTTW, Chicago, was conducted. About 500 educators were assembled for the demonstration. At that time, most of these educators had seen no educational programs for instructional purposes on a TV screen. In addition to the camera tour, sample instruction at both the secondary and higher levels was provided. Two-way audio permitted participation by those viewing.

1957--April 3. At the annual meeting the Chairman reported the activities of the Subcommittee to the general meeting of the Association and the entire Subcommittee participated in a discussion group on "What is the value and potential of television in education."

--The Subcommittee met four times during 1957 and engaged in consideration of the problems of the medium together with ways and means of best disseminating the materials and data already available.

1958--March 26. The chairman of the Subcommittee reported to the general session of the Association progress of the Subcommittee's investigations.

--In the April issue of the NCA Quarterly the Subcommittee published an appraisal of "The Current Status of Television as a Medium of Instruction."[6] Reprints were made available and thousands of copies of this report were distributed.

1959--April 22. At the annual meeting, the Subcommittee chairman outlined the tentative plans for the Seminar to be held in Chicago in December. Various meetings were held during 1959 to outline detailed plans for the seminar.

--December 3-6. Seminar at Chicago. This seminar was on "The Uses of Television in Education." It was made possible by a grant from the United States Office of Education. A sufficient number of research studies had been conducted and indicated much activity and progress had occurred. It appeared to the Subcommittee that a useful thing to do would be to invite two dozen of the best informed persons in the country to discuss knowns and unknowns of television in education. The Subcommittee and the experts formed a cross-section of educational and television organizations. With such a group the Subcommittee determined that any conclusions reached could be accepted as consistent with current practices and thoughts regarding educational television. The seminar participants identified a series of principles as valid in the use of educational television. Their work also covered thinking on practices regarding financing, personnel, methods, programs and operational procedures, as well as outlining a number of areas where further research was deemed necessary.

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[6] NCA Quarterly, April, 1958, pp. 354-372.

1960--A small booklet entitled, "A Report of the Seminar on the Uses of Television in Education," was derived from this seminar, and published in January. Initial response indicated that it was valuable and worthy of updating and, ultimately, wide distribution.

--During the year the Subcommittee met often to formulate plans and arrange details for a Pilot Conference. On March 30 the Chairman made his annual report to the general assembly of the Association.

--November 12-14. A Pilot Conference on the Dissemination of the Principles and Practices in the Uses of Television in Education, based on the report of the 1959 seminar, was held at The Ohio State University. This conference was made possible by a grant from the United States Office of Education.

Representatives from each NCA member state, five other regional accrediting agencies, various national educational organizations and selected educational television authorities were brought together to react, criticize, and in general appraise in detail the 1959 seminar report.

The Pilot Conference was to: (1) demonstrate the uses of different kinds of equipment and the methods for using television in education; (2) relate the uses of television in education to all tools used in education; (3) record the actions and findings of the Pilot Conference; (4) have a potential pattern developed for conducting additional dissemination conferences; and (5) bring the report on the uses of television in education up to date.

Dean Thomas C. Pollock of New York University was responsible for the present form of the booklet "The Uses of Television in Education" which had 25,000 copies published and distributed.

1961-62--Dissemination Conferences on "The Uses of Television in Education." Another contract with USOE made possible the eight dissemination conferences on the principles and practices in the uses of television in education. One of the recommendations made at the 1960 Pilot Conference was to seek funds to help make possible further dissemination conferences. The Pilot Conference would serve as a basic pattern for such future meetings, adapted as necessary to fit regional and local conditions, existing facilities, and the audience for whom intended. The representatives from each of the nineteen states within NCA made recommendations regarding their respective states' needs and desires for such future conferences. Several state delegations had suggested they meet in regional conferences because of mutual interests and problems, while other states felt their needs would best be met through conferences confined to their own state.

Following the above recommendations, the Subcommittee drafted a proposal for a series of eight dissemination conferences. Of these conferences, five were planned as individual state meetings and three as regional meetings. The proposal also included a plan to extend an invitation to the five regional accrediting agencies outside the NCA area to send representatives to the meetings, to evaluate the effectiveness of the multiple dissemination conferences and to prepare a coordinated report of such activities as a composite guide for educators throughout the nation.

The regional groupings were made as follows: (1) Iowa, Minnesota, Nebraska, North Dakota, South Dakota and Wisconsin; (2) Arizona, Colorado, New Mexico and Wyoming; (3) Arkansas, Kansas, Missouri and Oklahoma. The following conference schedule was adopted:

1. West Virginia--October 3-5, 1961. Jackson's Mill, Weston. Clarence Brook, Conference Director.

2. Indiana--November 6-8, 1961. Memorial Center, Purdue University, Lafayette. John Henderson, Conference Director.

3. Ohio--November 20-21, 1961. Ohio Stater Inn, Columbus. Richard B. Hull, Conference Director.

4. Region--Iowa, Minnesota, Nebraska, North Dakota, South Dakota and Wisconsin--December 14-16, 1961. Continuation Center, University of Minnesota, Minneapolis. Robert J. Keller and John C. Schwarzwalder, Conference Co-directors.

5. Michigan--January 11-12, 1962. Kellogg Center, Michigan State University, East Lansing. Lawrence E. McKune, Conference Director.

6. Region--Arizona, Colorado, New Mexico, Wyoming. January 17-18, 1962. Memorial Center, University of Colorado, Boulder. Everett V. Samuelson, Conference Director.

7. Region--Arkansas, Kansas, Missouri, Oklahoma--February 17-19, 1962. Ramada Inn, Oklahoma City, Oklahoma. Jake Smart, Conference Director.

8. Illinois--March 6-7, 1962. Illini Union, University of Illinois, Urbana. Charles J. McIntyre, Conference Director.

1963-65--Following the conferences, the Subcommittee met several times for a full and complete discussion of follow-up activities. It was agreed that in some way there should be incorporated in any future study, research, information and dissemination to determine: (1) what effect the conferences had on planning for ETV in the several states; (2) the specific needs for further assistance in development and planning, and (3) a present inventory of equipment, personnel, utilization techniques, etc., which could be a start of a continuing census of such information by NCA.

The Subcommittee's next project had the following objectives:

1. To determine current practices in using television in education since 1959 when the Subcommittee developed the "Uses of Television in Education."

2. To develop principles guiding the uses of television in education as a result of the dissemination conferences.

3. To develop a plan to gather reliable data on costs, equipment, personnel, utilization, procedures, and problem areas.

4. To project the direction that may be taken in the decade ahead.

5. To provide usable reports of the project to meet the growing needs for information.

Two depth seminars were proposed, one in 1963 and one in 1964, on Current Status, Continuous Census, and Projected Uses of Television in Education for the Next Decade. The proposal was approved by the USOE.

--The first seminar was held December 5-8, 1963 at Chicago. The general plan was to collect and evaluate the accumulated experience of a decade of educational television, to establish the level of development of the technology, to assess the successful educational applications, to comprehend the economics of the use of television, and to identify the current problems and future prospects of educational communication by television.

--March 6-8, 1964. A special planning meeting was held to discuss the cost of instructional television in terms of policy and administrative practices. It was hoped that reports from two universities and a secondary school system operating a VHF and a UHF television station would provide typical examples of the problems which are customarily ignored in making comparative cost analyses. After lengthy discussion, it was determined that the presentations had reconfirmed the fact that it was currently impossible to compare instructional television operations from place to place because no one was "costing" their operation in exactly the same way.

It seemed that a definition of television uses and the development of a framework for cost analysis must precede and be the basis of any set of recommendations to which the administrator and the board member would react in the second Seminar. Therefore, Seminar II would be in two parts with the first part aimed at developing the whole concept of costing and use. The revised plan would permit the Subcommittee, using consultant teams, to develop a "framework of cost" in terms of policy, administrative practice and accounting procedures for various uses of TV in education. To proceed on this basis, USOE granted the Subcommittee an extension of time and additional funds.

--August 14-15, 1964. In a meeting held at Columbus, a group of representatives from several institutions of higher learning attempted to isolate the several elements which need to be considered when discussing comparative cost factors. These elements were: (1) capital investments; (2) facilities; (3) program acquisition; and (4) systematic replacement of equipment. In order to provide useful information for the administrator, it was determined that the Subcommittee should attempt to relate educational technology to educational objectives. In order to do this, the Subcommittee should use the above items, adding as many variables as possible to each heading, and then review the data with cost analysts in the hope that "cost matrices" could be developed. It was also hoped that some ideas could be identified and generalities expressed regarding the costs to initiate television, to operate television, and to expand the use of television in education.

--November 15-16, 1964. In a meeting at Chicago, the higher education group reported on their further investigation of the "cost matrices" idea. It was believed that this approach had possibilities of leading to reliable data. It would be presented to a seminar of secondary and higher education representatives in February. These representatives would be business managers and television-curriculum authorities.

--February 21-23, 1965. Seminar on Instructional Television Cost Factors, Chicago. This seminar provided a thorough discussion of the cost factors related to television in education. The participants then divided into two groups--secondary education and higher education, for further discussion.

--August 22-24, 1965. Seminar on The Projected Uses of Television in Education for the Next Decade. Chicago. This seminar provided a

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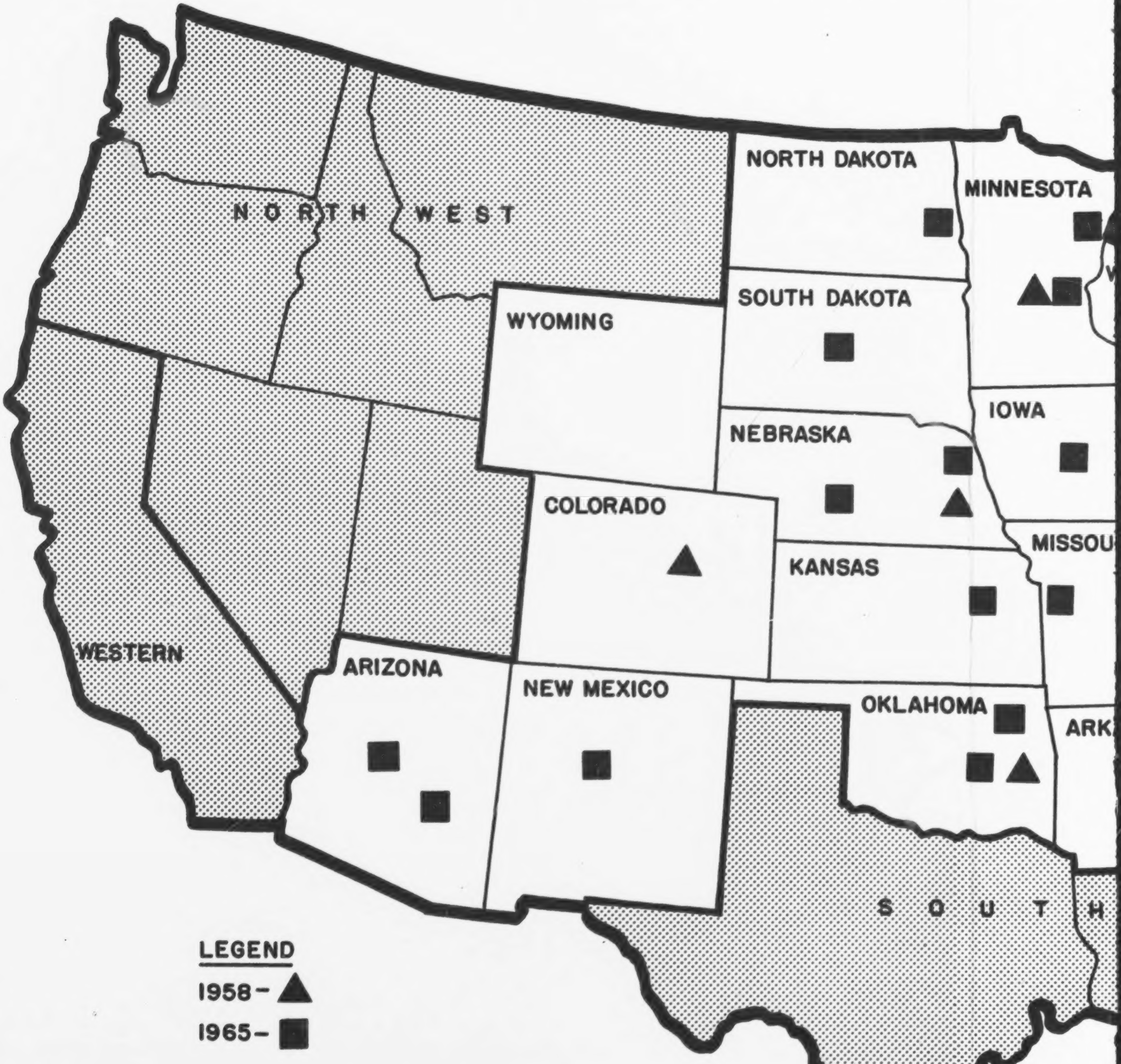
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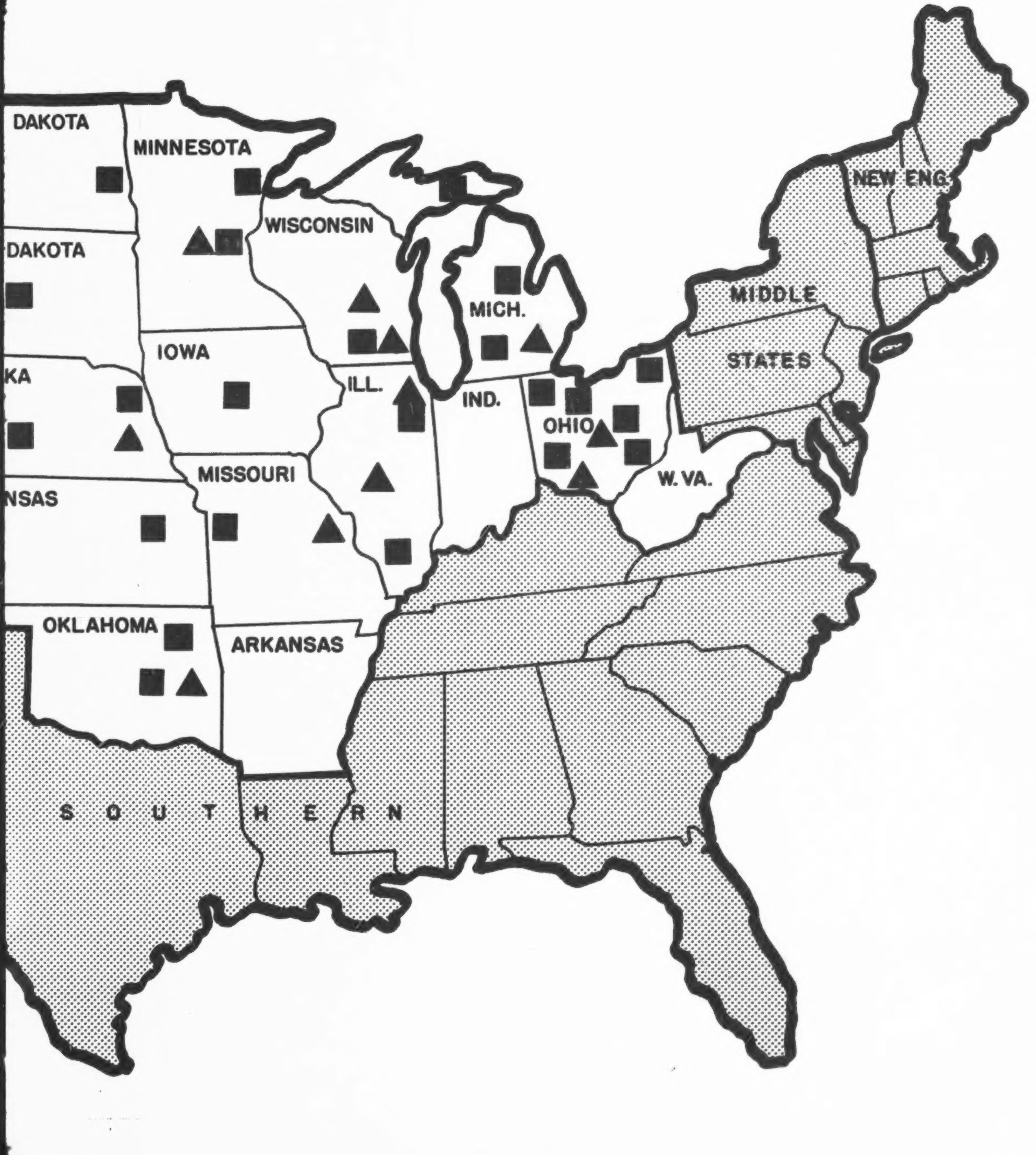
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great amount of data. It covered the new technology of education in the future, educational philosophy for the future, teacher education for the future, cross media developments, and applications of television technology--present and future.

SUMMARY

The Subcommittee on Television of the North Central Association believes that the meetings, conferences, seminars and dissemination activities it has conducted have aided in establishing a favorable climate for encouraging educators to consider the advantages of television in education. One of its major objectives has been to help educators look at the opportunities of using television for and in instruction.

The original charge remains and represents a task without end, that is: "to inquire into the status of television in education and, from time to time, to bring to member institutions pertinent information in this regard."

APPENDIX C

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Projected Uses of Television in the Next Decade--
August 22-24, 1965

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APPENDIX D

SPEECHES

PROBLEMS AND NEEDS OF EDUCATION IN THE 60'S
SECONDARY EDUCATION

By
Benjamin H. Willis, Superintendent
Chicago Public Schools

Last July I was taking a look at the 1960 census with some members of our staff in the process of preparing one of these reports that we do occasionally for the board of education. In looking through the census and gathering the information I needed, my curiosity was aroused because of what's happening in the large cities. What's happening isn't very difficult to find from census material.

In the first place you find that the income levels seem to be going up. It costs more to live, but you find some rather striking differences when you begin to associate census tracts and districts, or make comparable associations in whatever way a city is organized.

When you take a look at the professional employees in the various districts of a city, you again see some striking changes. Then if you look at such an item as education completed by those in the homes who are 25 years of age and over, according to the census you find in a city such as Chicago that maybe as late as 1950, the city was ahead of the state and, also, ahead of the national picture. You get to 1960, and the city is below the national median, below the state median.

So when I began to say to our people in this report that two of the 21 districts in the city are in much worse condition than any state in the union, people were a little aghast. I merely cite this instance to indicate tremendous changes going on in this city and this country in the last two decades in the movement of people.

The direction of change in American education during the next decade will be charted by the challenges we face today. I would list them as a rising population, a nationwide mobility of people (take a look at the figures of what per cent of population is living in areas of 10,000 or more, or 2,500 or more), the advancement of technology, and the rapid accumulation of new knowledge. All of these telescope into a kind of directional signal for future courses of action. It seems, better ways must be found for more people to know more in less time through more avenues for reaching the individual at the point of greatest need. I have already implied that one of these points is in the large cities.

It seems to me that time is of the essence. The college enrollments will double within the next ten years, and it is possible that 50% of this increase will occur almost before next Saturday--that is, in two or three years. It would seem that these numbers would call for a level of articulation not yet achieved between colleges and secondary schools, and for equally close articulation between scholars and the academic disciplines and those in teacher education. The need of increased articulation in all subject areas between the elementary and high schools then must follow. Already there has been a rapid expansion of the numbers enrolled in advanced placement courses, in the numbers who write college board examinations. Sequentially developed kindergarten through grade 12 education programs are increasing.

Not only has there been a concern for some time about the quality of what we teach, but there has been an equally important movement to emphasize the process of education. More and more people are engaged in research in cognitive learning. In the period ahead there will be an equal concern for effective learning. Pre-service education of teachers will change greatly, and an effective means of continuing mass in-service education will likely be developed. We have a group of 25 or 35 college seniors here in the city spending three months. We are trying to urbanize them. They are from the liberal arts colleges not too far away in the Midwest. They are having an experience in each of two types of schools. Part of this service is in schools which would be classified by some as slums, or in the slum area--and then a part of it somewhere else.

For many reasons increasing provision will be made for easy access to life-long learning for adults. Employment trends indicate a steadily increasing shift in the composition of the work force, from wage employees to salary employees. Industry and education will join forces in creating opportunities by meeting training requirements for supervision, research, engineering, maintenance, even cost analysis. Training and re-training in job skills to keep pace with technological progress will require a continuing canvass of the labor market and a corresponding reappraisal and revision of vocational schools or their curricula. This may surprise you, but it would appear that civic, industrial and community agents will close ranks with the schools in helping youths who are out of school and out of work. Drop-outs call for a teen-age census in high school of those who will respond to counseling services, to encouragement of full or part-time school attendance and work-oriented courses. The surging mobility of the people across the nation will require more literacy classes for both youth and adults. You might go out in the schools in the city and find 8,000 people tonight--maybe closer to 9,000--who are going to school, many unable to read or write when they started. They're all on relief. They do not have a basic command of the three R's.

Broader programs of organization for newcomers to the big cities will come in the wake of this mobility. Part-time evening and TV college courses that have mushroomed in the past few years can be expected to expand greatly within the next ten years. Health and medical services in the schools will be expanded.

Closer coordination will be achieved between the work of the schools and the health and welfare agencies, both public and private. I would hasten to add that I rebelled against that as long as anyone else, I guess. Probably longer than anyone here, because I've been around longer.

Counseling services will be expanded at the elementary, secondary and college levels, and I would add, a pattern of continuity and guidance will emerge. I thought John Gardiner meant what he wrote in his report two or three years ago, when he suggested that maybe the schools should try a pattern of having the counseling service go on through 21, and not depend upon the employment agencies and a few others. He didn't really mean it to the tune of putting up a half-million dollars, or something like that, but after all, this is continuity in guidance.

Automated systems will augment the inventory of pupil strengths for more effective guidance, for grouping by ability, and for increasing information about aptitudes. They will enhance the inventory of teacher strength by which to make assignments which more effectively use their talents and training.

More improvement of parent participation in the school life of their children will follow today's efforts. Today in Chicago we need to have parents team up with the school and the pupil to work together toward the realization of his goal. The development of techniques to provide large group instruction and at the same time obtain an understanding of individual learning problems will be a determining factor in the use of instructional media.

Closed circuit television will be developed for clusters of schools by means of coaxial cable linking schools having similar pupil population characteristics into a network. Thus the best teaching talent of the connected schools will present television lessons to children of similar needs, possibly through team teaching utilizing the strength of the combined staffs. In fact, we're moving from six teachers in Grade 1 in one school to, I guess 30 teachers in the first grade in 5 or 6 schools through this network.

Programmed learning, now in its infancy, may be the answer for some kinds of learning if properly developed and utilized. The automated classroom, hardly more than a dream, could prove the answer for providing for the individual, if the American scientist and businessman will give serious attention and adequate sums of money to the development of this field. When I was meeting with the investment bankers Tuesday of this week down in Florida, I walked down one corridor where there were four Fairchild TV cameras, selling the idea of investing more in Puerto Rico. Really tremendous things have been done in that country within the last two years. You push a button; you get a twenty minute story on their water system. Push another button; you get another twenty-minute story. All you have to do is push it over again, and you get it all over again.

It would certainly help a lot if you could hasten the day when the people developing this cartridged, six-minute machine make it possible to handle them like books in the library. It will be here before long. The businessmen and

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the scientists have to get in on this and help with these things. It takes a little money to get there though.

There will be changes in the procedures of recruitment, selection, placement and orientation of personnel. These procedures will take into account the need for teachers who are skilled in orienting the in-migrant child, and those children of limited background, to urban ways of life. Having lived with this for several years now, I'm beginning to understand something that I wouldn't believe two years back. We will seek more teachers with backgrounds in liberal arts and sciences to open doors to cultural opportunities for all children. In this regard a five-year program of pre-service teacher education, including an internship period, will become the mode. Fellowship programs for teachers will be strengthened. Study teams, workshops, teacher exchange programs, internships will play a more important role in continuing professional growth. More school buildings, undoubtedly, will provide for flexibility of scheduling to accommodate such things as team teaching. Out of 500 and some, we do have one building that not only is air conditioned, but you can also hook two rooms together, or four rooms, or three together by moving a few partitions. In that case, one teacher can work, and three can have a cup of coffee, or something else. In any event, adaptability to the changing needs of youth and better ways of learning will be the basic factors in architectural design. Facilities which will permit extensive use of electronic instructional equipment will be typical rather than atypical. The tendency to regard education as an investment in America's economic future may yet take hold. I would like to say it will take hold.

Raising educational levels is fundamental to America's basic concepts and to the dignity of the individual and to the individual's goal of self-realization. Raising educational levels, particularly of the unskilled laborer, is also a dollar and cents proposition in the light of relief rolls and unemployment compensation. In this connection, federal aid to vocational education and closely allied programs certainly will be expanded. Financial aid from the federal government will be allocated to the big cities to offset the adverse effects of urbanization, mobility, and technology for the same basic reasons as those underlying federal aid to impacted areas. The only problem is that we appear to have more than half the Congressmen with at least one school or area in his district in an impacted area. Some day maybe they'll get a few more Congressmen from the cities. The cities are impacted. Migration to urban centers for many states is a national as well as a local problem and will continue to be for some time.

Perhaps the most promising change in the next decade of American education is the current resistance, or lessening of resistance, to change itself. Time lags are shortening. New concepts in teaching and learning are increasingly viewed as areas of adventure into the world of research and development.

Chicago--December, 1963

PROBLEMS AND NEEDS OF EDUCATION IN THE 60'S

HIGHER EDUCATION

By
Norman Burns, Executive Secretary, North Central Association
of Colleges and Secondary Schools

Superintendent Willis came up with the same basic reasons for the problems that we face today--the problems of the 60's for both secondary and higher education. Primarily it is the question of numbers. Recently I found in a release from the Office of Education, dated December 3, that there are four and one-half million people in 2,140 institutions of higher education registered in the fall of 1963. This is an appalling number of people. It's 7.7% more than we had in the fall of last year; and since 1951, we have more than doubled the number of people in higher institutions. This is the problem. There it is right there.

Related, of course, to that is the rapidity of the growth of human knowledge, the extraordinary rate at which the development of new knowledge is taking place and the demands of a technological society, such as our, for new specialties--for specialists to be prepared to perform new undertakings in the service of our society. The tremendous proliferation of special fields requires more highly specialized training. This job falls on our colleges and universities along with the need to take care of the tremendous new numbers with which they are faced. These are all part of the same thing. The rising demands of the technological society is one of the reasons, I suppose, why we are having such a rapidly increasing percentage of our youth of college age attending college or attempting to attend college. It's all related to this matter of a highly advanced technological society.

Now, what are the answers to this complex of problems? In part the answer lies in leadership--educational leadership--and this relates to one thing that is certain. We cannot continue with business as usual in our colleges and universities. We must, I think, do away with some of the sacred cows. For instance, the insistence on the low student-faculty ratio. This, you know, is an historical accident anyway. With our tendency to use normative data for making evaluations of things, for making judgments about things, we came up with the desirable student-faculty ratio. I think it's been 13 to 1 for heaven knows how long. Actually, this came to be not because it was necessarily desirable, but because a lot of the colleges in this country are very, very small and in order to have a sufficiently large faculty to cover the breadth of subjects that you would expect to cover in a large college, they had to have more faculty than they needed per student. So the average came out to be something like 13 to 1. This has come to be a kind of standard or norm by which we judge the adequacy of the faculty in terms of numbers, with reference to the students.

This is the kind of thing which I think we've got to break. At least we have to examine it very carefully as we move into this period of accelerating growth and development. The whole business of class size is another. It's amazing how many faculty members still insist that they can't teach a class effectively if they have more than 20 students out there in front of them. There are many, many attitudes of this kind. They are going to be looked at very carefully, and I think it's fair to say that a lot of attitudes among our faculties in our higher institutions are going to have to be changed.

Certainly it's a time for bold and imaginative experimentation. We're not going to be able to staff our classrooms as we have in the past. We're not going to be able to afford the luxuries of short days, long vacations, low student-faculty ratios, small class size. These things were nice in the day when the higher educational enterprise did not face the demands that it faces today. We're not going to be able--even if it were a good idea--to hold to these ideas, because there aren't going to be enough teachers to go around.

We certainly need more faculty members. We need more institutions preparing faculty members, and we need more institutions to prepare faculty members to prepare more than they are preparing. This is a very easy thing to say, of course. It's not a very useful observation to make because it's at much too high a level of generality. When we say we need more faculty members, what do we mean precisely?

Well, I think among other things, we do need more faculty members of the traditional type; that is, with the traditional kinds of preparation, the Ph.D. degree involving research and we hope teaching competence, though we don't concern ourselves very much with that oftentimes. We need some of the trained specialists, the educated specialist in one or another of the disciplines. We need lots of other kinds of people in our faculties, too.

As we move into this period of still further expansion and growth, one of the attitudes that needs to be changed is the notion that a faculty member is a faculty member and he ought to have a Ph.D. of a traditional kind and that's the end of it. We've got to come more to recognize that there is a certain differentiation of faculty. There are a variety of jobs to be done on the faculties of our institutions of higher education. If we're going to have a variety of functions performed, we need different kinds of people to perform them. I think the institution of higher education is the only organization I know of that has recognized that there are all kinds of jobs to be performed, but which insists on the same kind of training for performing all of those jobs. This just doesn't make any sense.

We are going to have to think in terms, I think, of something less than a Ph.D. for large numbers of our college teachers. Actually, you see, this is what we have now. A lot of people don't really realize that we have never had on the average more than about a third of the people teaching in our colleges and universities with a Ph.D. degree. Now, certainly in the days ahead, until we have many, many more being turned out we're not going to raise that percentage very much. I would submit to you that it may not be necessary. Let's examine this thing. It may well be that the M.A.T. that is now being developed in a number of universities in preparation for high school teaching has real possibilities so far as the college is concerned, particularly the lower division of the colleges, the freshman and sophomore years. It would make a great deal more sense, I think, to have a well prepared person at the Masters level for some of these teaching jobs, and for some of the functions to be performed in our higher institutions.

We're going to need specialists of various kinds for the different areas. We know this now, and we recognize it, in a way, that some people are good researchers. They should teach very little, or if they teach at all, they are most effective when they are working with a very small group of advanced students. There are other persons who don't do very much in the way of published research but who are actual scholars in their field and who would do a great deal in the way of integration of the results of research that is done in their fields. They are interpretive scholars. We need these people. We have some of them. And then there is the person who is really the teacher, who is a consumer of research and scholarship but who doesn't pretend to produce this himself. He confines his efforts to the instruction of students. If there are these different jobs to be performed, let's recognize the possibility of different kinds of preparation for these people.

If we are to serve these numbers with anything like a reasonable measure of adequacy, we need, I think, to make much better use of the faculty members in the days ahead than we have in the past. The highly wasteful procedures that have been employed and are still employed in many institutions. We need, I think, to recognize that the master teacher, through various devices, is going to have to be in a position to reach much larger numbers of students than he is able to reach in the traditional classroom situation. I think we need to recognize that it is a mistake to limit the advanced scholar. Unlike European higher education, we frequently do this in American higher education by limiting the advanced scholar to work in only the advanced areas of his specialty. The students in the elementary classes should have some contact with these scholars, too. The way in which we can do this, of course, is through some sort of team teaching situation in which we utilize the services of our younger staff members, working on a team under the direction of a mature scholar and an experienced teacher in their field. These teaching teams might even include advanced students. Some institutions are doing this now. We're going to have to make more use of advanced students. There we have an attitude that needs to be overcome, an attitude that grows out of some things we did wrong in the past. The use of graduate students to teach elementary courses in our universities has been a scandal for a long time. Well, now there's nothing wrong in the use of advanced graduate students to teach elementary courses. It's the fact that they have been turned loose in the classrooms, in many cases, with little, if any, guidance. This becomes a job of secondary importance to them. Their main work is the completion of their degrees. As I said, many have had virtually no supervision. They have been looked upon as cheap labor. This is the wrong way to approach it. Now exactly the same kind of thing can be done and these same people can be used--and I think very effectively--if the objective is one of providing a good experience of an internship character for these people so that this experience can be built in as a part of their preparation for college and university teaching. Under the close guidance of the Masters in their fields, this will produce quite a different situation, and I think a very satisfactory situation, for our students in the colleges and universities.

I think that we're going to have to make more use of independent study, and I refer to the kind of independent study that is highly costly in terms of faculty time. Not the Oxford tutorial type of situation, but real, independent study in which the faculty members are available as resource persons.

You know we've been saying this for a long time. We still don't do very much about it even at the graduate level. I think it's high time that we put a little more responsibility on young people in our colleges and universities to get an education for themselves and that we spend a little less time in trying to feed it to them. Even at the graduate level we make this mistake, and if you need any evidence of the fact that we're doing it, note the difference that you frequently encounter in an advanced graduate student at the doctoral level between the record that he makes in his course work where he absorbs what he hears and gives it back and what happens to him when he's turned loose with his research. You frequently don't recognize him as the same man, because he has, up to this point, had virtually no opportunity to be independent in his search for knowledge. He begins to learn this at the point of submitting his proposal for a dissertation at the doctoral level. This is a crime. We can start this kind of thing very, very much earlier. Have faculty members available as resource people, but don't expect them to spend the amount of time in class and in direct instruction that we have in the past.

One other comment, or series of comments, relating to how we may deal with this problem of expansion and growth in the days ahead. That concerns this matter of the clarification and limitation of institutional function at the higher level.

As the variety of jobs to be done in higher education increases, we have, I think, a very great need for institutions to recognize the need for limiting their functions, their proposed goals, to those things that they can reasonably be expected to accomplish with the resources available to them and the resources which are likely to be made available to them. We suffer in American higher education from the attempt on the part of education to be all things to all men. Somehow institutional prestige is gained, apparently by extending the range of offerings, by involving the institution in more and more things. It's a part of the American idea that the bigger and more complex you are, the more prestigious you are. In this day when we are, indeed, in a seller's market in higher education, institutions could decide with some definiteness on some limited sphere of activities

--these things we shall do very well, and these things only. We shall not try to do everything that everybody asks us to. It would be possible today to a degree that it's never been possible before, but the curious thing is that we're responding in quite the opposite fashion. The competitive situation among institutions is greater, it seems to me, than it was before. The more students there are available, the more competitive these institutions become. This sounds like kind of a jaundiced view of things, for this is only true in part, but it's true in enough cases to be disturbing.

If one's neighbor moves to the Masters degree level, then one must move to the Masters degree level. If one's neighbor then moves to the Doctor's degree level, then one must also move to the Doctoral level. If one's neighbor opens an extension center in Podunk Crossings, then one must also open an extension center there. You see, in Podunk Crossings, there's too much of this kind of thing going on. This again is a question of attitude. Just how this attitude is to be changed I haven't the slightest idea, but I think we ought to be conscious of its existence and do what we can to work to alter it. This is a hard one to deal with.

But it is still true that too many institutions do think in terms of this kind of prestige, rather than in terms of doing a limited number of things very well. It's an interesting thing that some of the strongest institutions are those that are not ruled by these so-called demands and pressures to extend their offerings to extension centers and upward to graduate levels, etc. A characteristic of some of the very strongest institutions is the reluctance to take on these additional jobs. These institutions don't need this kind of prestige. They have a different kind of prestige. They're not going to gain by extending or by expanding their efforts into other directions.

I think another thing we're going to have to do if we are going to deal with the manifold needs of society in the days ahead adequately, as far as higher educational enterprise is concerned, is to recognize, in deed as well as in statement, the fact that there are different kinds of quality. We still think in terms of quality in higher education, but when we think of quality, we think of achievement of superior students, highly verbal students, who show up well in the tests, in a college which is restrictive at the point of entrance. This we think of as quality. This is quality education, but unfortunately, we don't think quite as highly of a quality program in a technical institute, for example.

We've got to recognize that the important thing about preserving quality in higher education, and preserving quality will be a real difficulty in the days ahead, is that quality must be judged in terms of purpose. The only definition of quality that is defensible in the world today expresses the idea of quality in terms of how well you do what you are trying to do. If it is to prepare electronics technicians and you are doing it well, then you are a quality institution. You are just as much a quality institution as the strong, highly selective liberal arts college is a quality institution. In fact, it is much better to be a first-rate technical institute than a third-rate college.

Now this, of course, relates to our whole system of values. What kinds of things do we value in our society? We have some pretty definite priorities, as you know. And a philosopher, even if he's mediocre, is up high; the plumber, even if he's top-notch, is down quite a ways on the scale. Now what we need, of course, is what John Gardiner pointed out in that excellent little volume of his entitled "Excellence" which probably all of you have read, in which he pointed out that quality could only be related to the success with which you did what you were trying to do. It is important in society that we have quality in all phases. That is, that all the people who are serving the society in various respects must be quality persons. He said a society, to paraphrase him, needs both good philosophers and good plumbers, and that unless it has good philosophers and good plumbers, neither its pipes nor its theory will hold water.

These seem to me to be some of the things that we face in the days ahead. Though I have not offered here any highly explicit solutions to these problems, I hope I have conveyed to you the thought that we've got to change some attitudes on some of these matters.

Chicago--December, 1963

INSTRUCTIONAL TELEVISION

GENERAL RESEARCH FINDINGS AND MILITARY IMPLICATIONS

By
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Television research in its infancy was largely supported and conducted under military auspices. This situation reflected the high cost of television research and the eagerness of the Armed Forces to explore any promising means for meeting its continuing shortages of qualified instructors and the need for improvement of military training.

There was never any shortage of people who thought that television could be a valuable medium for teaching. In reading the proceedings of seminars and meetings which occurred in those earlier times, I am continually struck with the similarity of the predictions and statements made in those days with those current today. There remained, however, the important problem of translating these predictions, beliefs and hopes for television into reality.

One of the earliest studies in the field, jointly sponsored by the Army and Navy, was carried out at Fordham University. One of the objectives of this study was to determine the influence of different types of instructional television treatments upon the amount of learning achieved. A series of lectures was presented by television on various military subjects to military students. These students had been given a pre-test to see how much they knew about the material beforehand and then tested after the television instruction to see how much they had learned.

One of the features of the study was the classification of the techniques of presentation used in the television instruction. When the subject matter was treated by actors in dramatic sequence, the type of treatment was classified as drama; when an instructor presented information in the form of a lecture, the treatment was classified as narration. And there were three other categories of treatment each of which represented some combination of narration with drama or atmospheric film.

An analysis was carried out to determine student learning achieved under these five categories of television presentation. To quote the investigators at this point, "The date of this study has suggested that direct narration is much more effective in producing learning than is dramatized action." Unfortunately, to my knowledge, this was the last time that this question of the effects of various types of television presentations, particularly dramatic presentations, was investigated. If the results of this early study are reliable, then think of the implications they have for many of our current attempts at presenting educational materials over TV. Think of the questions it must raise, for example, as to the effectiveness of presenting language instruction through the use of puppetry. Think of the implications for the use of cute animation or "entertaining" approaches to television learning.

In the early 50's, both the U.S. Air Force and Army independently assembled mobile television units. These units, consisting of cameras, receivers and kinescope recorders, visited military installations and demonstrated possible applications of television in military training. Reactions were solicited as to the estimated value of these demonstrations and they ranged all the way from "no value" to "has exciting possibilities." But there was no consistent pattern in these reactions nor could they be translated into any meaningful use of television. There were many questions raised about the possible effects of television upon student learning which these demonstrations were not designed to answer.

Finally, in early 1953, the Human Resources Research Office, George Washington University, of which I was then a member, and which is an organization performing research for the Army, was asked to design a study which would provide objective reliable answers to certain questions. The major question asked was, "How does television compare with current Army instruction with respect to teaching effectiveness?" And so, we had the beginning of what is the first, or possibly the second, study in this field concerned with this question. We did not anticipate that in the ten years to follow, this question would be re-examined at least 300 times in about as many studies. We also evaluated for the first time the use of television for teaching manual skills, and the effect of using kinescopes as a review or refresher procedure. The area of Army basic training was selected because it represented a very important training responsibility. Seventeen hours of instruction were selected and trainees, matched for aptitude, received either television or regular instruction in these 17 hours. Then they were tested to see how much they had learned. Television instruction was as faithful a duplicate of the classroom instruction as was possible or reasonable. The results indicated that television was at least as effective as regular instruction when the overall performances of the various groups were compared. However, closer analysis of the results indicated that for particular types of learning, where recognition was involved, or understanding of relationships among moving parts, or rote learning, television instruction was more effective. We also found that low aptitude personnel learned better from television than their counterparts did from conventional instruction. The higher aptitude trainees appeared to learn equally well from either conventional or television instruction.

An interesting finding was that television could be used to teach a skill as involved as disassembling a machine gun. One of the dramatic episodes in the study for me was watching several hundred men as they followed a television instructor step by step in the disassembly of this weapon. For this particular instruction, the television group did better than the conventional group in terms of speed and number of errors. Some groups of trainees received several hours of kinescope review toward the end of basic training. This instruction was a film recording of the original television instruction given eight weeks earlier. Our purpose here was to observe the effects of a review of this type upon trainees learning. We found that trainees who had not received this one review, regardless of whether they had originally been trained by conventional or television means, had shown losses of 50% or more in the learning they had achieved eight weeks earlier. But those who received one review by kinescope suffered no loss and in some cases did better than their previous achievement of eight weeks earlier. We were successful in demonstrating that through the relatively inexpensive use of kinescopes the effects of trainees' forgetting could be overcome in this military training situation.

While carrying out this study the investigators noticed that they had difficulty in keeping the television instruction the same length as the conventional instruction, which was a requirement of the study. One apparent reason was that television cameras strategically placed could reduce instructor walking and pointing time, and this alone might add up to five minutes in a 50-minute instructional period. We also felt that if we were given the permission to take the wraps off television, that is, use it in ways we thought might be effective, we could reduce teaching time and/or improve the level of instruction. Subsequently we were given permission to try to achieve these goals.

This time the subject matter was transferred to the field of basic electricity, because subject was typical of that taught at many military schools, and there were difficulties in teaching many of the abstract concepts found in this area. My experiences in the second study have forever colored may perception of the problem facing anyone who attempts to improve instruction. We selected four hours of instruction in the basic electricity course. They were chosen because, on the basis of student performance, they were described as the most difficult to teach.

We worked on these four hours for about three months, and we tried everything. We used television to visually reinforce key points of instruction. We used student participation, in which the students either wrote down or called out, at the beckoning of the television instructor, various items of information. We used review. We simplified language. We eliminated what we thought were confusing analogies. We wrote, rewrote, retested and re-televised the instruction many times. The sum of our experiences may be described as follows. We finally produced four hours of improved instruction which was shorter, ranging from 20% to 50% shorter in terms of time, and at least as effective or somewhat more effective than the original four hours.

I think an important major conclusion from our efforts was this: we were never sure and could never guarantee that each succeeding change made in the instruction would, indeed, be an improvement, that is, result in increased student learning. Sometimes the first attempt at improvement was the only successful one. Five or six revisions later we might not end up with a more effective instruction presentation in terms of student learning. At another time the fourth out of a series of six was the best, and so on. Our results were entirely empirical in approach and conclusions, and I emphasize this point here, because I want to make note of it a little later on. It was at the conclusion of this study that we decided to try something novel.

We had been hearing from various sources of what the qualifications of a good television instructor should be. These included such obvious qualifications as knowledge of subject matter, a ready smile, a quick wit, and so on. We had been working with prompting equipment and our lessons were in prompter form so that they could be read by anyone standing in front of the television camera. We selected an enlisted man who had never taught before and had no knowledge of the material with which we had been working. We rehearsed him a number of times until he could read smoothly and convincingly from the teleprompter the content of two of the hour-long presentations on which we had experienced instructors teaching students this same material. Now we permitted this relatively inexperienced instructor, who had been given a few rehearsals, to teach two of the hours to other students. We tested the students, and we found they had learned just as well from him as their counterparts had from the experienced instructors.

In succeeding years, as part of our Army television research program, we conducted additional studies. One of these was a follow-up of the last mentioned finding in which we trained three inexperienced men to teach 15 hours of basic electricity over a period of three days. Again when we tested the students, we found that they had learned as well as their counterparts had learned from experienced instructors. A novel effect was the finding that while the students were able to pass the test, the new instructors, when given the same test, failed to do so. As part of the same study we taught students by television over a three day period, six hours a day, to see whether there was any fatigue effect or any decline in learning due to such intense exposure to television. Comparisons with students trained an equal length of time by conventional instruction revealed no differences in the learning achieved.

It was in 1957, shortly after the advent of video tape recorders, that a study was established at Fort Monmouth to determine the effect upon instructor training, of recording and immediately playing back on video tape segments of their instruction. The study was never carried out. It proved so successful during its initial stages, in terms of instructor improvement, that it was adopted as a standard training technique by Fort Monmouth, and it is still in use both there and at other Army schools. In 1959 and 1960, we carried out two studies to determine the contributions to learning, if any, of instruction presented by color television as compared with the same instruction presented by black and white television. Using a variety of subject matter, we were unable to find evidence of any differences between the two ways of presenting instruction. As a result, with the exception of medical instruction, color television is not now employed by the Army for military training. It is interesting to note that even in the field of medical instruction, there is a decreasing use of color television as compared to black and white.

Our most recent study was completed last year, again in the area of basic training. Despite the first Army explorations in television in basic training, television was never again used in that area. Instead, eight of our technical schools which teach such subjects as electronics, missile maintenance, food preparation and medical instruction, were given priority in acquiring and using television. But as a result of the Berlin Crisis and the mobilization which followed, the critical shortages of instructors and training aids which prevail in basic training became further aggravated. Permission was received to again try out television in basic training but on a fuller scale than in the 1953 study. This time, about 60 hours of instruction, which represented most of the formal classroom instruction in basic training, was converted to video tape. Over an eight week period, a basic training company received all of its classroom instruction during the day of this means. In addition, we tried out a new technique in which television was installed in the barracks of these trainees. Every night, by means of video tape recordings, they received additional television instruction of the following types: 1) a review of previous instruction, and 2) a preview of forthcoming events, with the hope of reducing anxiety and improving performance in these events by showing the trainees in advance what was in store for them. The results indicated a very favorable effect from these uses of television. Not only was the test performance of the television trained company much better than conventionally trained companies with which it was compared, but the performance of the lower aptitude television trained personnel was at least as good as that of the higher aptitude conventionally trained personnel. We suspect that these improvements were due to the constant review and preview presented by television after hours. I take particular pride in these results because it is not very often, despite whatever techniques are used, that you get important differences in favor of an experimental group whether it be in television, programmed learning or what have you. As a result of these studies, the Army began installing closed circuit television facilities in many of its schools. Many years before most of our present civilian television activities, thousands of military men were trained by television in a variety of subjects. These included lectures, demonstrations in various manual skills, such as radio repair and typing. In these latter skills, the students, with the equipment before them, followed the instructions of the TV teacher. The problem of interaction between students and TV instructor was met and solved a number of times. Sometimes the finding of our Fort Gordon study, to the effect that eliminating question and answer opportunities did not appear to impair student learning, was accepted. At other times, a two way intercom system was installed. After a few weeks or months, when the triviality of most questioning had been sufficiently magnified and demonstrated by this procedure, the system was removed. The variety of military uses includes replacing individual hours of instruction completely by video tapes, or using television as a supplement to ongoing instruction. Another use involves presenting entire course segments by television rather than selected scattered hours. About 1959, both the Air Force and Navy began increasing their use of television for training. Today there are about 25 Armed Forces television facilities, and I would expect another ten to be installed within the next two years.

For many years military television studies dominated the field. Later, the Ford Foundation, and, of course, the Title VII program began to provide funds and support for the conduct of other studies. Many of these studies confirmed the results of previous military studies. More frequently, the finding was that television was at least as good as conventional instruction. Despite the criticisms of many investigators, this type of comparison continued to be the most popular exercise in television research.

In the past 15 years, there have been three major audio-visual research programs. The oldest and most extensive was supported by the Navy Special Devices Center, aimed at developing and improving the use of films for instruction. At about the same time, though for a shorter period, the Air Force maintained an in-service research activity with a very similar mission, and most recently, there has been the extensive Title VII program. The three programs deserve to be considered together because if anyone had sat down and analyzed the two older programs, it might have resulted in avoiding many of the deficiencies in the present Title VII program.

The older Air Force and Navy research programs had one asset. They reflected or were under the direction of one person who was in a position to at least give some direction and continuity to the entire program. One of the defects of the two older programs was the disjointed succession of studies they carried out. Fragmentary hypotheses were studied perhaps once, rarely twice. There was little or no follow-up on promising results, and both programs were characterized by an almost complete lack of any theoretical unification. Not that there is anything wrong with a completely empirical research program. It should, however, have the characteristic of pursuing to some depth a particular hypothesis.

The research supported by the present Title VII program has the following shortcomings:

First, the program lacks central drive and direction. It has been hampered, partly by legislative directive, by a committee system and by a diffusion of authority and responsibility which is reflected in the types of study supported. There does not appear to be any systematic pursuit or development in the studies I have seen. One investigator or group of investigators, for example, who under this program have conducted a series of studies, pursue a different problem with each study. Another defect lies in the nature of the reports themselves. The reports are not easily available. It is true that there are microfilm and exchange channels available. Under the older Navy Film Research Program, for example, the reports were easily available to interested investigators from a central source. To this day, if you were to write to the Navy Training Devices

Center, Port Washington, N.Y., you could still receive the large bound volumes of these reports. A similar distribution of reports from a central source, such as the U.S. Office of Education, would in my opinion, result in freer access to these reports than is now achieved.

The reports, many of them, are an abomination. They are poorly written, employ obscure terminology and seem to be an exercise in preventing the reader from finding out what happened. Very often, after you have plowed through a verbal quagmire, you find out that, after a pretentious introduction and a complicated and often naive experimental design, the results indicate no differences among the methods or procedures or techniques under study. And the experimenters seem embarrassed that their mountainous labor has produced these results. So they contrive very often to obscure them by using phrases which are familiar to many of you in this audience. "There was no significant difference between the experimental and control group, but the scores of the experimental group tended to be higher." Or, "while the results were inconclusive, the sampling of instruction was limited. It is felt that with a more representative sample and the following changes, etc. etc." Unfortunately, this future study is rarely if ever carried out.

One active field of research lies in the area of programmed learning. I mention it here because of the number of recent proposals for combining programmed instruction techniques with the television medium so that the effective instructional techniques of programmed learning could be widely disseminated by television. Unfortunately, while the ability of television to disseminate learning is not. Programmed instruction is an expensive, time consuming approach to improving student learning. It features an elaborate terminology, complicated techniques for organizing material as well as esoteric conceptions of the nature of the learning process. All of this is unimportant. What is important is the answer to the question: Does it work? Does it improve student learning? The answer is, sometimes it does, most often it doesn't. You may recall my earlier description of our efforts to improve four hours of instruction in basic electricity. We never were sure that any of our successive efforts at improvement would be better than the previous cases. Those who used programmed learning techniques are in the same position. Very recently the Division of Instructional services at the Pennsylvania State University issued a research report describing the results of several studies, one of which was a comparison between "the relative effectiveness of a programmed course in English grammar presented over television as compared with the same content taught in the usual way by an experienced teacher." The results indicated no difference in performance between the two treatment groups, and then there follows what I think is a curious conclusion: "that students can and do learn as much by programmed television presentation as they do under normal face to face or conventional instruction." I think this conclusion misses the point entirely. What the results indicated, and these results have been substantiated by other investigators, is that despite the costly and laborious conversion of a course of instruction to a programmed format, students learned no more than they did from a conventional unimproved presentation of this material made at far less cost and with the use of less complicated techniques. In other words, who is kidding who? Do we justify the acceptance of a difficult and expensive method of instruction, because students do not do any worse with it than they do with existing means of instruction?

As you can guess, I am just warming up to this subject, but within the time allotted to me I am only able to touch upon a few critical areas.

I have attempted to describe some of the studies conducted by military researchers and some current uses of military TV. Finally, I have made some critical observations of the current status of research in the audio-visual field, particularly that sponsored under the Title VII program. It was not my intention to make the Title VII program the depository or the major cause for long-term deficiencies in audio-visual research. I am personally acquainted with the key personnel, and they are an overburdened group, who monitor this program. But the Title VII program represents the answer to a long-term demand and need for research support in the audio-visual field, and if a program of this scope fails, it will be a major setback to the entire field.

Chicago--December, 1963

CURRICULUM AND TELEVISED INSTRUCTION

By
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Every school system has some kind of learning experiences for children. In some schools this may be a rather rigid prescription of learning experience. In other schools the program may be based on a statement of objectives and general procedure called guides. Some school systems prepare and provide resource units for the teachers. Others develop courses of study. The approaches to curriculum all depend on the manner in which the teacher approaches the teaching of children with the suggested material content at hand. Whatever the pattern in a school may be, it is the teacher who is the prime motivator of learning.

Some school systems believe in rigid structuring, others in flexible structuring. Rigid structuring may set limits on the learning while more flexible programs may be rich or impoverished as to quality of learning, depending on the understanding, imagination, and resoucefulness of the teachers.

In developing the curriculum for use by educational television in Oklahoma City, the original steps were made by the school administration. Certain inadequacies were identified in the learning experiences of boys and girls which could best be met through the use of a master teacher using the medium of television to reach a larger number of boys and girls. The administration secured the equipment necessary, employed the teacher and production staff, and immediately proceeded to offer certain courses in science and mathematics at the high school level. In the beginning, these were rather traditional type course offerings and were projected into the classrooms with little or no preparation on the part of the classroom, or receiving, teacher. Experience soon showed that much thought, planning, and preparation must go into courses being taught by television. Classroom receiving teachers and TV teachers were brought together to determine, to the best of their ability, the course content. These committees developed a course guide which would be used by the television and the classroom receiving teacher. It became the responsibility of the television teacher to determine, with the help of the production staff, how best to present the material over television. The committee also assumed the responsibility for developing suggestions for use of the telecast in the classrooms, for adequate preparation for the days telecast, then planned further suggestions on how the classroom teacher might follow up the telecast. These were prepared and put in the hands of all receiving teachers. As a part of the Oklahoma State Educational Television Program, the receiving teachers received the guides which had been prepared, but they had no voice in their preparation.

As we gained experience both in telecasting and receiving, it soon became evident that we must seek outside resources if we were to improve our offerings. Fortunately, there soon became available the Harvey White films in physics and the Baxter films in chemistry. We were most fortunate in Oklahoma City to have a young man who is a master teacher in mathematics who was willing to leave the classroom and develop television courses in algebra, geometry, matrix algebra, and math analysis. Two things developed from the use of the films and the use of the live teacher. It soon became apparent that our chemistry and physics teachers needed to be informed of the new approaches and the new concepts being developed in these areas. It became necessary in the case of the chemistry films to ask Mr. Baxter to spend two days with our chemistry teachers developing with them his philosophy and purposes in the new chemistry. In the case of the mathematics teachers, the Mathematics Council sent a committee to the Administration and asked for some special help in the form of consultants to help them learn to teach as the television teacher was teaching.

A special consultant was flown into Oklahoma City on six Saturdays and met with a large group of mathematics teachers and with the television teacher to develop the new mathematics. As a result of the success of the television teaching of science and mathematics, additional courses at lower levels were offered such as scientific geography at the seventh grade, physical science at the eighth grade, and living science and biology at the ninth grade, and science seminar at grade 12. A course in United States history was developed as was a course in state history.

At the present time a program designed to help orient sixth graders to junior high school is being used. Another program has been developed in cooperation with the nearby colleges for the benefit of high school students. The program is designed to help acquaint high school boys and girls with some of the information they need about colleges and what is expected of students as college freshmen.

The curriculum planners then turned their attention to the elementary school. As a result of the feeling of success at the secondary level, it was decided to offer elementary school music, elementary school art, some elementary school social studies, and later conversational French and Spanish. As the school system became interested in the new mathematics at the elementary level, it was decided to introduce this new mathematics to teachers and children over television. It was offered the first year to grades 3 and 5, the second year to grades 4 and 6. As a result of this experience, we learned to use television certain mornings of the week, before classes began, for in-service education of teachers who were teaching the new courses in the languages and the new mathematics at the elementary level.

Two more interesting curriculum developments appeared at this time. A teacher of commercial art was employed to teach shop drawing at the high school level. He was doing this successfully when we discovered that the elementary classes were watching this TV teacher and following him carefully and with success. This resulted in the changing of our offerings at the elementary level to include television lessons in drawing. These have become most popular with pupils and teachers. A second interesting development appeared after the senior high school principals had requested a program for physical fitness and conditioning to meet the needs of high school athletes at a time when their sport was not in season. Again it was discovered that children in elementary schools were watching and participating. Now physical fitness, as well as health and hygiene, is offered to the elementary level through the use of television.

Since the resources were available, and the summer schools were growing by leaps and bounds, it was decided to experiment with the teaching of typewriting by television. This proved to be quite successful.

Our experiences would lead us to believe that wherever possible the course planning should be done by classroom teachers and the teacher who would develop the course on TV. It is interesting to observe in receiving classrooms how we structure both rigidly and flexibly and what happens to a class of boys and girls who are receiving television in the classroom. The television provides a one-to-one personal relationship; there has never been any problem of attention on the part of pupils or students. The discussion which follows the telecast provides for the flexibility, but also forces a different kind of approach on the part of the classroom teacher. This has made it necessary for the classroom teacher to be thoroughly informed of the purposes and objectives of the course, as the TV teacher many times offers suggestions for further inquiry on the part of the students.

Certain important points were identified as we attempted to utilize television in the curriculum. 1) It is important to involve teachers at the classroom teaching level in determining needed courses and course content needs. They must form a group with the teacher who would do the telecast in developing a program which would include not only the telecast but the teaching guide for the classroom teacher. 2) Careful screening of content materials may cut down considerable busy-work and activities of little importance. The succinctness of the television presentation which gets to the heart of the content material, provides a core around which the classroom teacher involves his students and stimulates them to further inquiry. 3) In-service training of teachers is important in whatever area they are working. This is especially true for the classroom teacher who may feel an insecurity in dealing with certain types of subject matter. It is also true in helping teachers to gain security in certain methods of introduction and presentation of new subject matter. 4) Consistent and continuing evaluation of the television presentation as well as its contribution in the total curriculum is important. 5) It must be recognized that certain courses are best done through direct teaching via television, while other uses of the television supplement and offer considerable enrichment over and beyond the general course content.

In conclusion, as we have worked with the medium and evaluated our experiences, we have become more and more convinced that at this time we have merely scratched the surface of the potential of educational television. It is our hope that more and more research will uncover new and better ways of production, that more experimental work will be done in other areas of the curriculum, and that we shall all be constantly striving to improve not only our television production, but improve the curriculum as a whole in light of current changes in our culture.

Chicago--December, 1963

UTILIZATION OF ITV MATERIALS IN THE CLASSROOM AND ON THE CAMPUS

By
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An historian seeking to describe the birth of instructional television in this country might well say that the medium was fostered by a series of explosions, increases, and shortages. As a result of these upheavals, our schools today are suffering standard American agonies, critical attacks, self doubts, loss of a sense of purpose. As a nation we have begun to realize that our educational system is a foundation stone of our national well-being. The current popularity of phrases like human resources, supply of trained manpower, and talent search indicate that we are beginning to value intellect and trained intelligence. But some genuine agonies accompany this new appreciation of education, agonies which are reflected in microcosms, such teaching tools as educational broadcasting in classrooms. For example, if instructional television is an important factor in common with all education and educational tools to our survival, then many critics argue it should be of paramount importance to ensure better quality of instructional television production and utilization of programs with more enduring substance, more carefully integrated in the total classroom experience. Others see instructional television playing a major role as education is increasingly bent to the national purpose. Education in their view ranks as one of the nation's vital defense industries devoted to producing sane manpower.

Fortunately, however, a contradictory view of the purpose of education still maintains its hold in this country--the classical ideal of liberal education built within the American framework of the comprehensive high school and the liberal arts college. These two viewpoints frequently colliding within the same person, cause much of the kind of confusion about the goals of American education in general, and the focus of instructional television in particular.

As I mentioned earlier, the medium was first widely adopted during an emergency, an emergency of manpower and school buildings. In the late 50's education was under great pressure to increase its productivity. Today, now that it is established as a full-fledged industry, productive efficiency on a cost per student and test result basis all too often has resulted in an undue emphasis of the wonders of new, efficient technology, rather than on what the machine can do to enhance the hallowed personal relationship between student and teacher. Things that are easily measurable tend to obscure the things that are more difficult to measure, but which people, like grown-ups, for example, feel are of utmost importance.

Teachers, of course, are well aware of all of this, and although some have come to see that the future may offer new and challenging opportunity, others are apt to be more cautious. They respond with hostility, opposition and overt or covert resistance. In the cast of instructional television, teacher reaction is largely dependent in the way the medium is exploited. If television is used only occasionally to bring to pupils a public event such as a session of the United Nations or special program on the new science or the new mathematics, the teacher's day-to-day activities are relatively undisturbed and his status is not threatened. Even the common, once-a-week series which is offered to enrich and supplement regular classroom instruction in a given subject raised few problems once the set or sets are properly installed, particularly if the teacher remains free to use, or not to use, each broadcast as he sees fit. He can generally continue his usual round of activities, squeezing in the television experience at the expense of some less fruitful activity. His syllabus and teaching plans remain unchanged. But, when broadcasts in a given subject are presented two to five times a week, as is typical of much present-day instructional television in this country, it cannot be accepted so casually. Major readjustments on the part of the receiving teacher are involved. The mere prospect of such changes in accustomed classroom routine is disturbing. And the question naturally arises on the part of the teacher about the quality of instructional television programs. Is the quality of instructional television worth the loss of valuable class time?

Even more critical, however, is the apparent threat to the teacher's concept of his basic classroom role. No longer is he the sole master of his little school empire. He must share his teaching responsibilities with the television teacher, who may indeed eclipse him in the eyes of his pupils. Most important of all, instructional television, directed to many classes of different kinds encompassing different abilities, necessarily limits the freedom of any participating classroom teacher by dictating broad outlines of subject matter, sequence of units and topics and a relevant time to be devoted to each. At its best, such direct television instruction can be relatively flexible and can be a strong and valuable adjunct to the classroom teacher. The necessity for careful planning, quality programming, and adequate orientation and in-service training, however, is all too obvious.

But these things cost money and tend to degrade a favorable cost-per-student ratio. As is the case also of course with quality instructional television programs, prepared with the experience of Europe and Japan and the United Kingdom, and even Canada, our cost-per-student ratios are low enough that we cannot spend the kind of money and the kind of resources that are being devoted to instructional television programming in other parts of the world. Above all, the television lessons must be worthwhile as I have just indicated. Instructional television surely must stand or fall in the quality of the television lesson itself. In many cases, the competent teacher, the teacher of excellence and imagination, opposes television not because of his reluctance to make use of the medium, but because of disgust and repugnance at the poverty of its programming and its failure to demonstrate what it can accomplish.

Instructional television, when part and parcel of the school curriculum, involves severe readjustments on the part of the classroom teacher. He is forced to surrender a measure of classroom autonomy for the advantage of better effectiveness in the presentation aspects of teaching. But if he can be led to redefine his role in highly professional terms as a manager of learning situations and of a counselor of learners, he will find a transfer of responsibility for much of routine presentation to the television lesson or to the lesson in combination with the television teacher as a means for providing more opportunity for handling group and individual learning activities.

If a television lesson is combined with other teaching aids and new, significant dimensions of learning can be presented to teacher and student alike, and the full characteristics of non-verbal learning can be exploited, hopefully, he will derive great personal satisfaction and fulfillment from teaching in this new and challenging way.

Let us now examine for a moment the present state of instructional television utilization as exists in this country. As a case study, I selected the Dade County, Miami, Florida, school system. As most of you know, they are now operating two television transmitters. They have been in the instructional television broadcasting business a long time. Rather than present the case myself, as I am rather ambivalent about some aspects of the case, I am going to bring you via kinescope Dr. Hall of the Dade County system and Mr. Mitchell who will discuss the utilization aspects of the instructional television program at Dade County, in combination with their field workers, the people who go out and give the teachers actual field assistance. They are instructional television resource consultants.

(KINESCOPE)

I think the picture is fairly typical throughout the country except there is less emphasis on large classes in other parts of the country in general and there's less emphasis, I would say, in involving the pupil in terms of social dramas, discussions, and debates. In general, as I get the picture, there is more passive note-taking and less activity. Because they work within very, very difficult limits in terms of finance and within a limited range of possibilities, the Dade County authorities have tried to involve students in a variety of activities. Nevertheless, as one goes through the classes and observes the students in action, there is a tremendous emphasis on putting down information on paper to be regurgitated at suitable intervals in the forms of tests, multiple choice exams, etc.

One can't help but feel that this is primarily education for the middle stream, not for the bright youngster with an inquiring mind, and not for the underprivileged, but rather for the motivated youngster who will take his notes and put them on paper and memorize them and organize himself in such a way that he can dutifully inscribe the relevant facts at the appropriate times--people who will honor appropriate academic rituals. This is a real problem that I think we face in this country today. How to use the promise of various tools at our disposal--film, television, programmed learning, etc.? How to utilize them in such a way, to get at the other end of the educational spectrum, the one-fifth of our youngsters who will come from poverty-stricken culturally deprived homes, and the one-fifth, or one-sixth, whatever figure you want to use, youngsters who are above average ability, who in many cases now sit in frustration and boredom in classroom experiences. And who know, some of these may also turn out to be potential Oswalds.

I would like to echo heartily what Walter Stone said about the Italian experience and about some of the experiments being done in France, in Japan, and in Italy. In the Italian experience and in the experience of Japan, in terms of rural schools, we can get clues and pointers on how to deal with these minority segments of the school population, and also how to deal with the adult population on the farm and in the city slum, in ways of re-training and re-tooling.

Here, of course, we have an illiteracy club. It's never too late. An imaginative extension program organized by the Italian television authorities which covers the entire Italian peninsula is a good example. They not only use television, but they use very imaginative follow-up devices in terms of other teaching aids, in terms of imaginatively organized printed texts. The programs themselves are produced not only using simple, inexpensive visual aids, such as the overhead projector, but they use drama; they use comedy; they use Buster Keaton, and mud pie type skits. They are made entertaining so that people who are not used to receiving information in an organized fashion can absorb and become involved in an educational process.

There is another significant aspect to the European experience and to the Japanese experience which has great promise. It is a coordinated system of producing and distributing materials that are very closely keyed with the instructional television lesson, using overhead projector transparencies in some cases, more often, simple things like short film clips and some of them are getting very interested in the 8mm thing. Of course there is experimentation in the United States and Canada along the lines of using the 8mm cartridge in combination with television, and, to a very large extent, using slides and film strips. Time does not permit an exploration of this subject, but I did hope to show you, for example, the kind of thing that NHK is doing in terms of producing colored slide sets on Japanese history, or that the Netherlands are doing. They've been doing this for a long time in terms of radio-vision experiments. They have a technique developed very heavily on the Continent and in French-speaking Africa of using simple, inexpensive film strips especially keyed to radio broadcasts. The experience gained in developing this business of radio-vision is now being applied to television.

In Canada, the National Film Board and CBC are collaborating on a series with the hope that they may very shortly produce a series of still pictures which will be used in black and white on television and then distributed in color via film strip form. There is one experimental series in the life of the Eskimo. The color transparencies are of excellent quality and provide not only non-verbal information in terms of the Eskimo, but each color transparency is almost an aesthetic experience itself. Incidentally, there are no captions over these transparencies. You look at the picture frame by frame, with occasional separate caption, but this is not the usual set of film strips where you have typed script messing up the non-verbal part of the presentation.

Over 125 years ago a New England educator and scientist, Marshall Conant, was concerned with the development of teaching aids in the field of science. At that time he wrote as a preface to a slim volume, "It is the desiring of the author to treat science generally and to exhibit its various principal departments in that order and connection in which the uninitiated would seem naturally to acquire a clear understanding of it." One hundred and thirty-seven years later we are still exploring this vast, and yet really unmapped, frontier.

We have been discussing here some of the exciting technological developments and possibilities in terms of equipment and hardware and organizations. I submit to you, there are many other dimensions to these problems with which we must also cope, and not the least, the human dimension, the classroom teacher, the way in which she can use these machines to creatively explore the minds of the students.

Chicago--December, 1963

SHARING INSTITUTIONAL INSTRUCTIONAL RESOURCES

By
James S. Miles, Director
WBAA Radio-TV, Purdue University

Someone once said, cooperation is only as good as the cooperators. This I expect is true. Certainly the cooperators working with the committee on instructional television of the Committee on Institutional Cooperation have been indeed good cooperators. This group which has been active formally for less than a year is meeting regularly, exchanging volumes of material, has completed a survey and in general has stirred up more activity among CIC institutions than anything the CIC has done in its relatively short life time.

The Committee on Institutional Cooperation of the Big Ten and the University of Chicago was formed in 1958 at the insistence of the Presidents of these institutions who saw the need for an even larger educational complex than any one President had under his immediate command. They wisely set up the machinery so that the faculties and staffs of the various institutions could cooperate. They did little to determine the ways such cooperation would take place. Since that time nearly 40 different projects have been undertaken. Most of these concerned themselves with the formation of Committees with the membership on these committees composed of counterparts at two or more CIC institutions. One thing that should be made clear is that it is not necessary to have all 11 institutions cooperate on any project. In fact most of the projects do not have this broad representation. When two or more institutions do want to get together in the name of the CIC, this is enough to work under the CIC aegis.

Two of the most active of the projects of the CIC are worth noting here. One is the exchange scholar program. Briefly this allows a graduate student at any institution to take courses at another institution without any of the usual problems of admission or even any problems of additional fees over and above those he would pay at his home institution. The visiting scholar is responsible for his own maintenance while on the host campus, but, other than this, he finds the way remarkably clear for him to partake of the particular and peculiar subject matter courses offered at the host institution. Several scores of visiting scholars are now active.

The CIC Liberal Arts Deans have been a particularly active group; and while they are considering a host of things, their most interesting experiment to date has been in the far eastern language institutions which are currently being held. These were funded by an outside source and have three years of support assured. The first meetings of the seminars were held at the University of Michigan this past summer. The next seminar will be held at Indiana, and the third of the seminars will more than likely be held at Ohio State in the summer of '65. The best possible faculty was brought together for the seminar this past summer, and students found a stimulation in this sort of a joint seminar (which was attended by more than 100 individuals) than was possible had this sort of a meeting been held on any one member campus. (Centers for language areas are being proposed for each CIC campus--thus Slavic to Indiana, Portuguese to Wisconsin, Far East to Michigan, etc.) Apparently the Liberal Arts Deans are working on a sort of combination of the Far Eastern Language Institute, the language area centers and the visiting scholar program as it might apply to U.S. scholars visiting abroad. Thus there are thoughts that permanent staffs may be set up in a number of countries or areas of the world to which visiting scholars from any of the CIC institutions, and others on a contract basis, can report. These staffs will help the visiting scholars with their arrangements at the local institutions. Along this line, of course, there is a great deal of work that needs to be done with the host institutions to have them devise a curriculum for the visiting U.S. scholars that is meaningful.

The forerunner of the current CIC-ITV Committee was active about three years ago. At this time it was felt that there was a need for rather massive outside support which would permit the development of truly definitive courses primarily at the undergraduate level in one of the sciences or basic humanities. A proposal was made to several foundations and federal agencies calling for something around a million dollars. This did not receive any support, and consequently the whole proposition was, in effect, abandoned.

The Presidents however were insistent that television was one area in which cooperation could be carried out. The president of Purdue, F. L. Hovde, was one of the most insistent of these, so it was only natural that I should take the lead in attempting to rally the people on the various CIC campuses who were responsible for instructional television there. I conducted a little informal, one page questionnaire and reported the findings of this questionnaire to the CIC. They suggested that we formally organize ourselves, and that we prepare to conduct an extensive survey as to what was going on at the various CIC campuses. This organization was completed last spring and the survey was conducted in the late spring and early summer. A book, a copy of which I have here, was then published and distributed in July of this year. This book lists some 106 courses or units that contain 1,961 lessons that are either being done live on CIC campuses or have been recorded and are being used currently. CIC-ITV Committee members have made good use of these books to inform counterparts on their home campuses of what others are doing at other CIC institutions. I'll pass the book around so that you can take a look at it. It more than likely is too detailed for general distribution. However, if some of you do have real use for an unbound copy, I'll be happy to try to supply it. We plan now to up-date the book during the summer of 1964 and reissue it then in September of '64. Whether we will do this sort of up-dating annually will have to wait until we can see how many changes are actually made.

This book presents an interesting listing of what is going on. It is not, nor will it ever be, very actively used as a source of material which will be requested and used on other campuses. To the best of my knowledge, only one exchange of material has actually come out of this book. This was the Psychology course between the University of Illinois and Purdue University. This was not wholly satisfactory even so because of the differences in organization between the Purdue and the Illinois courses. And it only served really to reinforce our belief that the key is joint planning, joint production and joint use. In other words, only materials that are specifically set up from the outset for exchange are going to find ready exchangeability.

We next set about to develop some general areas or categories that were best suited for cooperative production and exchange. These were submitted to the Liberal Arts Deans' Committee earlier this fall, to the CIC representatives, and to the CIC Presidents. This is "Report A."

Similarly, we prepared "Report B" and submitted this to the various groups mentioned above. This report showed the discipline categories arranged in priority order of their cooperative possibilities on the CIC campuses. I hasten to add that in this instance we are working with the Liberal Arts Deans, so, consequently, we are only interested in those subject matters or disciplines which at one or more institutions fall within the purview of the Liberal Arts Deans.

Now what has come out of all this, and what is apt to come out of it in the relatively near future?

1) We began thinking in terms of exchangeable materials so much that we now have a series of tapes available. They were prepared at Purdue and represent the best thinking in the highly technical area of Permafrost. These four technical papers were presented in an international conference on Permafrost, were recorded and are now available for use by the other institutions as well as by Purdue within undergraduate or graduate classes where applicable. Indications are that four or five institutions will rent these from Purdue and use them in this manner.

2) We feel that with several groups, such as Geology and Education, there will be a gradual development of this joint planning, joint production, joint use idea. However, the development will indeed be slow. If we manage to do one of these a year we will be doing very, very well.

3) We felt it was time, and have reported this to the CIC and to our CIC Presidents, that this is about as fast as things are going to go on a strictly cooperative basis. If they, or the CIC Liberal Arts Deans or any other one group, wish to take the lead, make the identification and point the finger at any discipline and say "Do it," then things will move faster. But it will only come if one of the major administrative divisions of the CIC institutions takes this sort of a lead.

4) We are convinced that there needs to be some standard set regarding production, tape recorders, visuals, films, etc. We are indeed glad the NAEB and the DAVI are now jointly planning an approach to some sort of standard on the new helical scan tape recorders. This is, indeed, badly needed and should receive solid support from this conference if exchange is one of the things we really wish to promote.

In conclusion, I believe that the spurring on of this sort of cooperation will be the biggest contribution television can make to the total educational effort in the next decade. Certainly, we will enrich the curriculum of even the richest institution, and, certainly, we will break down some of the barriers that now exist between educational institutions and which cause expensive duplication and competition.

Cooperative efforts are stimulating, fascinating and frustrating. Frank Stanton, talking about another problem, put it something like this, "Progress in such matters is determined more by the possible than by the ideal."

Much is possible by cooperation, but I am not certain that we know yet what is ideal.

Chicago--December, 1963

ITV PROGRAM RESOURCES AND UTILIZATION

National and Regional ITV Libraries

By
Edwin Cohen, Director National Instructional Television Library

The instructional television library project received its impetus from a 1961 U. S. Office of Education sponsored survey by Jack McBride and Wes Mierhenry, which really was an outgrowth of the availability and application of the video tape recorder, which became generally available to education in 1959.

From 1959 on, in many parts of the country, material that had formerly gone into the schools live was now being recorded and retained, but it sat silently ticking like an unexploded bomb on a shelf of many radio stations and television stations throughout the country. This material, I guess, was viewed as a potential resource of great merit; and whenever you have a lot of material that might have value, I guess you ought to survey it. This is what happened.

It was found, I think to some people's surprise, that there were something like 15,000 individual lessons around the country, comprising about 500 separate courses, that were considered suitable for use in the schools. From this discovery and the generally expressed opinion that people in education would want to use materials from other places, there was created a demonstration project which was to test and to demonstrate the character and feasibility of a permanent library system to facilitate the exchange of this kind of recorded material. Three elements were to be tested and demonstrated--two regional libraries, and a national library.

What I am about to report on are the activities to date of the two regional and national libraries, and to indicate some significant factors that have appeared on the scene since the conception and institution of this demonstration a couple or three years ago, and to indicate where things stand at the present moment.

One of the three components was the Northeastern Instructional Television Library, which was contracted under Title VII of the NDEA to the Eastern Educational Network in Boston to analyze and demonstrate the policies, procedures, and practices necessary to effect regional exchange. Immediately, that organization set up a group of task forces, involving at least nine-tenths of the adult population in New England, surveyed the regional curriculum needs and established production priorities for that region.

They gradually moved away from the library concept as being too static. They felt that the best thing that they could do was to focus on the needs for cooperative planning and production of actual broadcast materials for the schools. They have, in fact, after cooperatively planning with certain other training and evaluation aspects built in, produced a set of films that is presently being broadcast dealing with modern math for teachers, called "Sets and Systems."

The Great Plains Regional Instructional Television Library contracted to the University of Nebraska was to be a demonstration, as you all know, of the acquisition and distribution of ITV materials within and for the Great Plains region. It too began by surveying regional needs and acquired some courses. It used what I shall call a restaurant method of distribution, which is to say, that after acquiring the right to distribute certain courses, after having master tapes deposited with it (currently it has nine such courses available), it would accept an order from a potential user and then would prepare duplicate tapes on order. In addition to these nine courses, it serves as the regional outlet for certain courses that have been acquired by the National Instructional Television Library.

The National Instructional Television Library was contracted to the National Educational Television and Radio Center in New York City, and its mission, while somewhat similar to the other two libraries, was a demonstration to establish the practability and nature of a permanent national system. To do this, it too acquired and distributed courses on a demonstration basis, using what I should term the cafeteria style. That is, it acquired the right to distribute, duplicate, and set out on a steam table, these courses all ready to grab. When someone ordered them, he could merely take them home with him, or eat them on the spot, and then he would return them. The cafeteria idea now breaks down at this point, because we don't get the scraps back, we get the same thing that we put out.

We, also, at the national project faced a dilemma from the very beginning. The dilemma, I think, was whether we were a demonstration or whether we were a service. In terms of our contract, we were very clearly a demonstration. We could acquire a limited number of courses with which to experiment in order to find out problems involved in exchange. On the other hand, no one in the field would believe it. By that I mean, everybody wanted material of the highest quality and quantities of it. So when we hung out our sign, we were to be a cafeteria for all kinds of good material. When we only had four dishes, I think some people were disappointed.

At the very beginning we said that we would try and help others obtain directly from owners those materials which we, because of the restrictions of the demonstration, could not ourselves make available. So we threw together a master list of all the courses that all the owners in all parts of the country were willing to make available to anybody who might want them. This we called a "Guide to Available Materials." But that wasn't really enough, because you can't adequately describe what's in a telecourse presentation in words. So, since we needed it for our own evaluation purposes anyway, we went ahead and made a sample program from each of the courses this owner said he would make available to others. We created a cooperative, sampler library. A number of people have used this sampler library, and, by and large, the users say, "We think we could probably do better--that was pretty bad, wasn't it?"

This, in a sense, is to relive the history of educational television as it has evolved in ten years. I say this because I want to refer to it later.

I think that some significant external changes have come upon the scene since the basic thinking of 1960 and 1961. One of the new factors was the growing certainty that soon, and inevitably, there would occur the creation of the machine mileau and a great increase of distribution facilities whether we like it or not. New channels have been found and made available. New technology has made many places more anxious to go ahead, and it became possible for them to go ahead with ITV planning. Certainly, new money has become available, and, as in one midwestern state, the legislature considered making an application for this money on the grounds that if we don't get it now, we may never get it. Money is hard to turn down. So I say that inevitably there will be a substantial growth in the number of television facilities in this country whether or not we are ready for it.

The second factor was not apparent in 1961 because of the vagaries of Congress. This factor was the retirement from the fray of such major forces as the Ford Foundation, and the National Educational Television and Radio Center. They both, dramatically, suddenly and recently announced that they were in a sense retiring from the instructional television field. In general, you might see in this action the rationale that since the youngster has been force-fed for ten years, it certainly ought to be able to go on its own steam from here on out. At any rate, this is the situation.

The third factor to come upon the scene is an outgrowth of these other two. In September of this year an attempt was made to pull together a single person or persons from each of the various states who was responsible for the planning or development or application of television in education in those states. Forty-three such states and the District of Columbia were represented. The consensus of all these people in all these states concerned was that there is a materials crisis on the horizon, and that there is an urgent need that "quality" instructional television materials be available from other sources to supplement local instructional television materials.

If you will excuse an imperfect analogy again, you might say that the boys are out dropping coils of garden hose in every state in every community that represents the distribution system. In some places there is real concern as to what the hose is to be hooked into; what's going to go through the garden hose. It could be cold water, and it wouldn't make a whole lot of difference. It could be brackish water and it will kill, or at least it will create or leave a stench. Or, it could be liquid fertilizer, which has a stench, but at least it results in something good.

We have been hearing about the wonderful technology at our disposal. Everybody has been saying, in a sense, let the other fellow worry about the proper application of it. That is, the equipment people would be the first to say, "We don't have anything to do with the programming, like the people who made the atom bomb." The educational broadcasters frequently retreat and take the position, "Well, we're just providing and operating a service. Just tell us what you want on the air, and we'll do that for you." But I haven't heard in all this vast land of ours a great rushing sound of educators coming forward to say, "We'll create the material, we know what we want, and we'll do the job. We'll do the job to make television do what it ought to do."

I say this because we in the library project have reacted to these various forces by believing that we no longer have time to conduct to its normal end, which would be 1965, a demonstration project concerned solely with running a pilot for what ought to be. We think the time has, in a sense, run out, and we are accelerating the end of what might be characterized as the demonstration center service phase.

We are currently working on the design of a service-centered demonstration to begin in June of 1964. What are we thinking about? Well, we couldn't duck it, so we've had to tackle it. We're thinking about the definition of quality instructional television material? We're thinking about the extent to which existing recorded material can satisfy quality. We're thinking about just how an adequate supply of quality materials can be assured for those who wish to use them. In this connection, we're thinking about the alternatives and possibilities in procurement processes, the organizational requirements and the financial support that is necessary to make all this happen. I would say at this moment that we are persuaded on the basis of the activities in which we have engaged, and we've spent $900,000, or have that much committed, that we don't know enough from the evidence that we have gathered to be pessimistic nor optimistic. But we do know enough to be mightily concerned. At the present moment, we're just plain busy with these concerns.

Chicago--December, 1963

THE NEW MEDIA IN EDUCATION

By
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Most of what I'd like to say reflects an optimistic view of the roles played by new media in education and a personal sense of enthusiasm regarding the future. First, therefore, I should express reservations I do feel regarding our present situation.

American education hasn't yet, and isn't very likely in the future, to be completely overhauled, restructured, supercharged, accelerated and/or rendered total efficient simply by using television or through the application of any other new media. Neither teachers nor educational institutions will change very much or rapidly away from instructional conservatism simply because they may have purchased with government money video tape and teaching machines. Although we've had the motion picture for nearly a half century, excepting the case of a few very recent experiments, it doesn't appear that we've ever really tried to apply what we've learned in producing modern teaching films. And in spite of its ubiquity for more than a quarter century, it was only this year that radio regained a place in the educational "sunlight." One-fifth of American youngsters are, indeed, probably being taught by television during some part of the school year but by no means half as imaginatively as several hundred studies and experiments have shown they can and should be.

So the first point I'd like to make is this--thanks to foundation and federal dollars and fantastic amounts of energy expended by our professional colleagues, the new media are in American education today, but they aren't really of it in the sense of full acceptance, integration and sound employment in terms of optimum teaching and learning efforts. We don't yet have the trained teachers and media specialists nor the organization of school and college curricula most conducive to optimum use of all new media. And so--to end this statement of reservations, what I have to say is best expressed in the future tense and will concern what I believe the new media can or will contribute to help meet the problems of education.

In short, excepting specific projects mentioned, we shall from here on be chiefly concerned with the promise of the new media rather than with a harvesting.

In the context of instructional promise the new media do look very good. In referring to the new media we are thinking of television and video tapes, the motion picture, the listening or language laboratory unit, teaching machines and programmed instruction, overlay transparencies, multi-media approaches and the new simulation devices. Experiments completed during recent years suggest that application of these media isn't limited in any way to given levels of education, to given types of subject matter, nor to independent functions.

Indeed, the research evidence says overwhelmingly, "When they are used appropriately, the new media can be major factors in bringing about change and improvement in education." For instance, as I've had the chance to report on several previous occasions, new media research and experimentation have taught us again and again that school and college instruction isn't always most effective when conducted in "little square boxes" of 20 to 30 feet on a side. We've also learned from new media research that people having different backgrounds can often learn quite different things, at different rates, and that some can learn better from one type of material while others may need very different helps.

We've also learned from new media research and experimentation completed during recent years that there isn't any magic in a nine-month school year or in a 40 or 50 or 55 minute class period. We've learned that sometimes people become more interested in what they're studying and that they can remember much more of it afterward if they can work alone, have a brief period for review shortly after initial study (and then receive only occasional guidance by talking informally with faculty); that others may learn very well indeed from the "give and take" of class discussion; that parental aid in learning languages taught by television is capable of producing excellent results; and that some ideas are mastered easily by very large groups of several hundred or more students. We've also learned that unless our educational facilities are made sufficiently flexible to provide the kind of instruction required for use of new media, they probably won't be worth the very large and, indeed, the increasingly vast amounts of money they now cost.

With regard to the media themselves, we've learned that today we must have immediately at hand the full spectrum of learning and information resources including books, magazines, and other forms of printed materials; pictorial and graphic aids, motion pictures, discs and recordings; television and teaching machines--we need them all for instruction as well as reference purposes, and sometimes we need many of them at one time--at other times, only a few or single units. Especially with respect to materials used directly in teaching, we've learned to look among all available media and seek out those which will help most directly to achieve a given goal of instruction, individual study or review, as well as in classroom presentation.

And here now are some additional facts concerning research completed in the field and experiments of more recent years with which I've had personal acquaintance and a number which are summarized in an excellent volume edited by Brown and Thorton on The New Media in Higher Education. You know that television can, and is being used successfully in teaching the full range of academic subject matter. The assist it can give to education through permitting the sharing of resources has been demonstrated in many parts of the United States and specifically studied in Oregon by the higher education system as well as in T.E.M.P., the Texas Educational Microwave Project. Closed circuit TV has indicated high potential for improving instruction in surgery, dentistry, medicine, psychology, etc., not to mention reading, languages and math and the physical and natural sciences. More specialized applications of CCTV include, for example, teacher and classroom observation as a part of a teacher training program, use as a simplified aid to one-way vision in training guidance counselors, presentation of review material and of standardized exams, and even transmission of research documents from a central to a branch library. Indeed, experimentation with television and, especially with closed-circuit systems, has created a situation in which it appears the medium may well become a 24-hour carrier of everything from formal classroom presentation to enrollment figures and statistics of local stock inventories, and has shown that the design and development of TV service in American schools and colleges will increasingly be conceived as an instructional service program linked directly to data processing, library and audio-visual service agencies rather than in the previous image of a separate TV station.

On the other hand, broadcast TV must continue reaching out to where people are with non-credit as well as credit instruction in adult and continuing education. It must also continue the work of trying to bridge educational gaps--for example, as between high school and college, and in filling instructional vacuums such as that currently represented in the national requirement for manpower retraining and related problems of relocation.

This additional comment concerning research on educational uses of TV--from my point of view, we've reached the stage when studies should no longer be supported to prove that television can teach this or that to large and small groups of individuals. The question we now should ask about TV are different ones and very much harder: Where does television fit best in the school or college curriculum? How can its utilization be improved and how can its management be helped to be more efficient and economical?

Programmed instructional approaches are, in fact, accelerating rates of learning as well as individualizing study today in thousands of American homes, schools and colleges. Programmed instruction has proved effective in a broad range of subject matter areas including statistics, Russian, music, chemistry, biology, religion and the humanities, remedial English, and engineering. TV combined with programmed instructional approaches has also been studied at Penn State and is now being researched at UCLA. Computer control of programmed learning is the central idea of the PLATO system at Illinois, and has also been used experimentally by the Systems Development Corporation in California, not only to make available the full range of modern techniques for storage, retrieval and correlation of data masses, but also for instructional sequencing and the simultaneous recording of student responses to virtually any form or combination of forms of instructional media presentations.

To comment further on programmed instruction, I'd like to say the development and application of programmed learning in elementary and secondary schools doesn't, in my opinion, represent the invention and use for instruction of what is a totally new medium of communication. Rather, I tend to define programmed instruction as a small step-by-small-step approach to the organization of learning experience--an approach which is keyed to some rather explicit principals of stimulus response psychology which were discovered quite a while ago and tested in the initial stages with pigeons and rats in university laboratories.

Also regarding programmed instruction, the most essential concepts which underlie the arts and sciences of programming are now making contributions in team teaching, to ungraded programs, in dual progress activities and the like. Programming methods have also been tried in other areas of school work, for instance in the laboratory, in homework, group discussions and seminars, for investigation, for self-correction, writing and so on. But from my point of view, within a few years programmed learning approaches will probably be judged more significant for their encouragement of improved educational engineering and as almost unequaled sources of feedback from the learning process with specific contributions made to production of better textbooks, instructional television, motion pictures and lessons plans, etc., than they will for uniqueness in form (i.e., programs themselves) or their contributions through teaching machines. Incidentally, and conversely, I'd like to suggest that some of the skills of good text writing--demonstrations and visual communication--have much to contribute to programmed learning.

The single laboratory unit has virtually become standard equipment for teaching languages and, increasingly, other subjects including shorthand, music, drama and speech, etc. The library of audio tapes available for use in the listening laboratory has already become, in some schools and colleges, quite formidable in size. The chief policy question now arising is how long should the tapes actually be kept, for what purposes, etc.

Of course, the learning laboratory station (or carrel) isn't really a medium. It's simply a place or environment designed especially for listening, viewing, etc., which may cluster a variety of media--an environment, incidentally, which according to studies now under way (and one of these is at the University of Pittsburgh) may be influenced more significantly and effectively by its actual size, its capacity to isolate students one from the other, design of its control panel and so on, than by what it can actually communicate through tapes, films, slides and other materials.

Also at Pitt is another project which highlights the promise of the large overlay transparency as this medium is used by Edwin L. Peterson in offering a new approach to the teaching of English composition and style. Using his overlay techniques Mr. Peterson almost appears to make even commas as well as colons become interesting as they flash on and off the screen in colors. To suggest a more subtle but perhaps more important value, he has enjoyed remarkable success in teaching awareness of language organization and style, etc., using visual techniques which in themselves highlight and reinforce reading in a manner calculated to stress the points which are being taught. The Pitt project is labeled "Luminous English," and I think it's a very appropriate name.

We could also talk about engineering, dentistry and physics, or a thousand other applications in the elementary and secondary school or college classroom of this valuable teaching tool, a tool which can be animated by changing the polarization of light as it projects on the screen the transparent image and thus creates the illusion of motion, e.g., the human bloodstream or the flow of winds in a high pressure system if the subject were meteorology.

Work being done in Monmouth, Oregon, has suggested some new and exciting approaches to the problem of teacher education using simulation devices. These are devices, not unlike the driver-trainer, which place students in artificial environments and present some specific situations to which a student must respond by choosing among alternatives and actually carrying out a particular course of action. Such systems can make very extensive use of slides, films, graphic materials and recording equipment as well as supplementary printed aids, and they are usually programmed in a very specific sequence which, however, allows for branching and a selection among alternatives.

Use of new split screen techniques for making comparisons in teaching has been pioneered by various units in the armed forces. And since 1961, the University of Wisconsin has featured this technique in its multi-media instructional lab. In my view, experiments such as these are most significant in the sense that perhaps they foster learning processes as a result of achieving a new perceptual synthesis. For instance, one might show at the same time in fixed positions several elements and time phases of a demonstration on crystal formation while utilizing the motion picture to show ways in which a crystal changes and final results of a laboratory experiment.

We haven't said very much concerning the motion picture other than to note the fact that our production techniques are usually something less than startling. But, it may be, that during the last few years we've finally learned to stop making instructional films in the image of textbook chapters or sections and to use film more imaginatively--whether we're actually concerned with illustrating dynamic concepts involving motion or inducing appreciation of a dramatic sequence, with creating a mood, or hope to present vicariously, with proper editing of space and time, elements in a scientific process.

In any event, we do seem to have learned in very recent years to use the film with individuals as well as groups. We are also beginning to see the promise of film in short clips when used to portray actions which a student must later verbalize and dramatize in a foreign language, its worth as a research tool and/or a record of research. Thanks to 8mm. cartridge-loading film projectors we now have the single concept film and probably even more important--the quite remarkable experiments of Louis Forsdale at Teachers College, Columbia University, in developing 8mm. film which, when used with a British rear screen version of the little Technicolor projector, calls up direct viewer response in tracing numbers and figures on the screen as a film clip teaches a diversity of subjects ranging from the brush strokes of Chinese caligraphy (which apparently can only be performed in a specific way because of the nature of the instrument used in performing the art) to something approaching flash card techniques for learning simple multiplication. The film is also being used in such fashion that the child almost literally plays a game by pointing at the part of the word which separates when hyphenated--to mention a very simple example. Whether Forsdale is right in claiming that 8mm. film is the most important teaching tool of tomorrow because it can now be made available in a form which even small children can use without hurting either materials or machines, remains to be seen. But the related point he makes is even more significant, and that is that we haven't really begun to think of the medium in other than very standard ways, and its promise for use in formal instruction is, therefore, as yet almost literally unknown.

Well, perhaps I've covered enough examples to suggest to you some of the ways in which new media help to improve and enrich both teaching and learning. But before moving on, there are two additional points I'd like to make regarding current media projects and research. It is true that we do now have available for use in education a very rich variety of improved and newer media capable of single and multiple use. But when we consider their instructional value, I believe it may be most important--for instance in the case of television--to recognize that because of its expensive technology and its nature as a carrier, it has been introduced too frequently in schools from the "top down" as a result of administrative fiat. An unfortunate consequence of this could be that the content of American education might be determined more by persons concerned with the technology and the mass dissemination of messages and less by professional personnel who are truly knowledgeable of and concerned with the instructional needs of youngsters in school.

My other point concerns the kind of research we've been doing. Researchers themselves admit generally that too much media research suffers from the lack of reference points in theory and a serious lack of precision in specifying criteria which should be used for measurement. In my judgment, the key problems which now must be solved in planning optimum use of E and ITV, as in the case of other new media, aren't very likely to be resolved by mere expensive support of several hundred discreet studies of the kind typical of those completed during recent years. The research we need most in ETV must be of a kind developed more in sociological and organizational terms and which will relate more to educational practices than to the psychological laboratory. To use a simple analogy--in the same way that studies of aerodynamics and carburetion have little or no direct relation to the influence of jet age transportation on the world's business and industry (although, in a sense, one clearly is cause and the other effect), so I doubt whether more discreet studies of learning behavior induced by TV will give us the answers we need so urgently for planning service in our schools or for designing plans for TV administration.

On reflection, there's still another point I'd like to make concerning new media research and experimentation and its implications for the future. We need to be less parochial and give more attention to work abroad. Although most new media programs established in Asian countries are restricted to higher administrative levels and don't have much opportunity to influence local education, there is considerable likelihood that many Asian countries will have instructional television long before they have developed for schools any very successful programs for films, slides, and film strips.

By contrast, in Japan which is, of course, the exception and has a very advanced media program, the use of broadcast television is far and away superior to much that I've seen in this country. The same can, in a way, be said about limited aspects of Italian TV and the potential which is represented in French instructional television, also a nationalized endeavor. The importance of teaching films in Germany and of the co-production plans and projects common throughout western Europe may be well known to most in this group. But are you aware that in the realm of programmed instruction, the French and British are coming along, the Japanese are moving rapidly and if recent statements can be believed (and I'm quoting a recent confidential report on the subject) the Russians "have achieved greater development in this field than the rest of the world, including west Europe and the Federal Republic of Germany (excepting the United States). The importance of this development cannot be underrated since the Soviet Union endeavors to continue experimenting in this field in order to 'catch up with and surpass the USA'". Or at least so says Mr. Hartmut Vogt in a recent statement on cybernetics and Soviet pedagogy.

Now in the time that remains I'd like to list a few obstacles which stand in the way of our making the most effective use of new media in American education. And then, since we can't solve all our problems at once, I'd like to give special attention to two of these problems--personnel needs and new media service organization and management.

During recent years several surveys have been conducted to find the barriers to effective use of new media in education including studies of teacher and pupil resistance and other psychological factors. The results of such surveys and, indeed, the consensus reflected by most teachers and educational administrators suggests that, while psychological factors are present, the chief obstacles which lie in the path of new media utilization may be more obvious. Too often teaching materials and equipment aren't available when needed. Many classrooms aren't equipped for projection of films and other visual materials. New media service programs and systems serving both schools and colleges aren't sufficiently well organized to guarantee that a teacher can have the right material in the right place at the right time. Budgets are still very far below standard, and there exists an almost desperate shortage of appropriate materials in many subject matter fields.

Further, while the new Educational Media Index scheduled for publication next spring by the McGraw-Hill Book Company may overcome a part of the problem, there does exist over the country an acute lack of information concerning materials and services which can be obtained.

From my point of view, there are two additional obstacles to effective use of new media which are even more significant: First is the lack of teachers, school administrators and media service personnel trained properly for optimum utilization of television, programmed instruction, etc. The second derives from our urgent need for new administrative arrangements conceived on a regional basis for providing new media service to schools. Then, too, we lack a clear philosophy which knits the fields of media management patterns which are still to be found in a majority of schools and colleges. Keys to the new philosophy needed may be found in programs now being established at the University of Miami in Coral Gables; Stephens College, Columbia, Missouri; George Peabody College in Atlanta, Georgia; and in particular at the new Division of Learning Resources at Florida Atlantic University. This new division has been justified as an agency having two functions: (1) to put at the disposal of a teaching faculty all media technology, service and systems which will enhance the effective communication of ideas in a pre-programmed phase of learning; and (2) to put at the disposal of the student all media technology, services and systems which will enhance the effective communication of ideas in a self-programmed phase of learning. Given objectives such as these and development of the professional education programs needed to recruit and train personnel able to appreciate and carry out such objectives, we may begin to fill this void.

Now, for whatever it may be worth, here is my view of how I think we should go about it. First, we need a new definition (possibly for some a redefinition) of the fields of media service responsibility. It's my opinion that a cluster of six functions can be said to represent the chief media service requirements of American schools and colleges and that, increasingly, these functions must be performed under single professional management. These six functions include the following: (1) continuing research and experimentation involving both instructional uses of media as well as the study of media service arrangements essential to satisfy the needs; (2) local adaptation of teaching materials as well as production of new learning resources, taking into account any special requirements which specific media may have as well as the need for "conceptual interlock" which increasingly must guide preparation of new materials in terms of their anticipated use in teaching; (3) distribution of all types of materials and equipment essential to aid the instructional research work of groups and individuals within the school or college community; (4) counseling and training of individual teachers, students and student groups to identify their requirements for improvement of media use; (5) demonstration and display services which will be more adequate than those normally provided in schools operating under typical present-day arrangements (arrangements which so frequently tend to place responsibility for such work in the office of a harried superintendent, principal, or university functionary); (6) full use of modern computer technology which can be employed not only to solve problems of an advanced statistical nature and undertake information storage and retrieval work, but also to generate new instructional programs and, by what amounts to massive data correlation, and actually through synthesis create new knowledge by "intellectronic" processes.

The second recommendation I'd like to offer concerns recruiting and professional education as such. In my view, ETV personnel, programmed learning specialists, librarians and audio-visual coordinators are but single groups of specialists concerned with educational communication and information services. This then should be their new "umbrella." Here is one of the reasons why. Regardless of specific media interests and basic undergraduate preparation, all media service personnel working in educational fields must have thorough training in education. Those who look beyond initial professional specialization toward eventual acceptance of a top management post, for example as supervisor in a school, school system, county or state agency, there must be represented in the professional curricula basic study of learning and information theory; communications theory, institutions and processes; systems development and engineering; a mastery of administrative science; a thorough grounding in economics, research methods and statistical procedures; full understanding of media production arts, crafts and sciences; as well as capacity to appraise the methods and techniques of instruction.

Further, (at the other end of the media service career ladder) we must develop new and specialized programs at the junior college or lower division level which will lead to preparation of educational technologists. Also needed urgently are more opportunities for in-service training of practitioners and provision of re-training opportunities for managerial personnel.

In short, we need consciously to recruit and breed the new hybrid who will manage our educational media programs of the future. Fortunately for all of us, two studies are currently under way--one at Alameda County College under the direction of Bob Hall, and the other (I am pleased to say) at Pitt. Both presently appear to look toward development of an inter-divisional program in educational communication and the information service professions which is likely to have several internal paths of curricula, but which, calling upon resources available from the total University, is conceived in terms of media service findings as we defined them earlier, i.e., research, planning and project work; production; distribution; advisory and training services; demonstration and display; and the harnessing of computer technology.

And here's the last point I'd like to develop formally before giving an illustrated report on an ITV project completed recently at Pitt. It's my view that in time (and it probably won't be long at that) we'll see develop on a regional basis--crossing municipal, county and state lines--new instructional media service programs created for the purpose of serving both public and private education. These new programs will give special attention to production of teaching materials (especially production of instructional TV and related supplementary aids); provision for research and evaluation services; in-service training of teachers for optimum use of learning resources in general; and the regular exchange and distribution of instructional materials and equipment required for use of all new media; the authority for and support of such regional efforts will have to be obtained through delegation by those who will benefit most directly from whatever services are provided, probably employing a regional council or federation plan. Such instructional media service "reservoirs" will, as I see it, enlarge logically and greatly extend the reach of the educational media service program. In any case, they will provide new and very much needed larger units of service which may perhaps, thanks to national efforts now being considered, evolve logically into a media service complex approach--a complex capable of being tied (as I think it must eventually become) directly into a nationwide system of educational intercommunication and information services. A massive program of state and federal aid will, of course, have to be developed to support such an effort, and it must be one which extends very far beyond the present provisions of any legislation in being, or that planned, if we are to reach the goals described.

Nonetheless, such is the need and now here's an ITV illustration of the point in a western Pennsylvania dress.

(FILM PRESENTATION)

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STATUS REPORT: EXISTING AND PENDING ETV FACILITIES

By
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I'm not sure, as close as we all are to the elements of educational broadcasting, that we are completely aware of the magnitude or the dimensions of educational broadcasting today and what people are saying about it for the immediate future.

I would like to highlight briefly the recent past and take a very casual, but quick, look at the immediate future from the vantage point of the Federal Communications Commission and its role in fostering the development of educational broadcasting. It is obvious to everyone that educational broadcasting did reach new heights of development during 1963. The first ETV station to go on the air, KUHT, at the University of Houston, celebrated its tenth anniversary. The eighty-third station went on the air in Greenville, South Carolina, the first of several broadcast stations proposed in that state. These 83 stations are serving a potential 110 million Americans in some 37 states. In the Commission, we now count 26 outstanding construction permits for new stations. There are some 37 construction permits pending.

We have petitions asking for the reservation of some 82 channels in addition to 350 that are now reserved. There are approximately 500, or you name the figure, closed circuit TV installations serving educational, military, and hospital facilities at the present time, and more coming into the service almost too swiftly to keep track. There are some 5,000 people directly employed in educational broadcasting and/or closed circuit facilities. Approximately another 10,000 are related to educational broadcasting or these facilities by virtue of their involvements as teachers, participants, or educators professionally interested in the use of broadcasting and/or closed circuit use of the medium in the teaching/learning process.

The capital investment in broadcast facilities is now over $40,000,000. The operating costs for 83 ETV stations alone approximates $20,000,000 annually. The Educational Television Facilities program under Public Law 87447 made its first group of five grants to ETV developers in South Carolina, Illinois, Utah and Virginia recently. Five other grants will be announced shortly. The expenditure of these ten grants will involve approximately $2,000,000.

The Commission issued a new proposed table of allocations for television, which suggests the reservation of 703 channels for ETV, including the 100 plus

VHF channels already reserved. The new table also proposes designating some 44 cities in the major population areas for two ETV channels. This means there will be some 703 ETV channels reserved for education. Our general objective has been to provide at least one educational reservation in every community where educational interests have indicated a channel is needed and two channels in places where more than one channel has been requested. We have used specific state plans where such plans have been submitted. In other states we have used the information contained in the NAEB National Survey of Educational Channel Needs. We have also attempted to provide at least one unreserved assignment in every community with a population of 10,000 or more, except for communities which are near larger population centers.

In any case, the objectives of this proposed plan are already met by existing VHF channel assignments. Where the objectives are only partially met by existing VHF assignments we have attempted to add UHF channels. Whereever there was a choice between a community slated for an educational reservation and having none and a community slated for a commercial or unreserved assignment, preference was given to the educational need first. I should point out that no effort was made to saturate 70 UHF channels. If assignments could not be made in accordance with the established guide lines, no assignment was made. A number of assignments on the table currently in force have been deleted and omitted from the proposed new table, because they did not meet the established criteria. However, none of these deletions affected construction permits, petitions for channels, or existing stations. The omission of these assignments does not preclude future assignment in these communities if the need arises. However, in some cases, the omitted assignments have been, or may be used, to meet the demand in other places. I also wish to reiterate that the naming of a particular community on this table does not mean that the specific city is more deserving than a city immediately adjacent. It merely serves as a reference point to the area in which the assignment may be used. Usually this refers to a 15 mile radius of the assigned location. If a community is not listed in the proposed table, it does not mean that it will not have a channel available for educational development. Recall, if you will, that educators have acquired some 110 channels in addition to the 242 originally reserved.

It is assumed that we will continue to make channels available to any bona fide user through our normal petition process. What I'm saying is that 703 proposed reserved channels is not a fixed or final figure. While not meeting the NAEB proposal of nearly 1000 channels needed for education, we have moved in a substantial manner to continue to offer educators the opportunity to add channels to the reserved list in the future. You probably have recognized by this move and other supporting actions of the educational television development in the past, and we hope in the long term picture, that the attitude of the Commission is one of sympathy and keen concern for the development of educational broadcasting.

I think it's obvious that a pattern of individual station support is becoming more evident. We know there is an increase in dependency for support of educational television upon school systems and other public education funds. Coupled with this is the fact that more and more applications from stations are coming from public educational groups, fewer from community leaders. This indicates that in the years ahead school men will be in direct control of the stations, or because of their substantial support of the stations will in effect be in a position to call the shots on the programming and operation of these stations. While the Commission, I feel, should not hesitate to authorize ETV station licenses to such individuals and groups, at the same time we should make clear our interpretation of the need for ETV stations to serve the broad, cultural and public service needs of the people, and not be limited solely to in-school educational programming, as important as this programming is to the American educational establishment.

To insist upon the expanded use of the television medium, the Commission adopted rules and regulations instituting a new low power, instructional television fixed service in the 2500 megacycle band, which will enable educators to make use of television techniques without resorting to main channel broadcasting. I'm sure that most of you in this room are completely aware of the potentials of this service. I might just point out very briefly, this offers educators the opportunity for multi-channel use for distributing educational material on a local basis. The system is not intended to be hooked up as a state-wide distributing service, but it certainly does have the facility to expand into coverage of regional areas within a state. The Commission adopted rules and regulations instituting this low power, instructional, fixed service, and the form is available. We have not yet accepted our first application. I would be regarded as an over-optimistic enthusiast if we don't get some 50 applications by the end of this school year, but I expect that we will. I'm still optimistic.

The Commission continues to support the development of educational radio by authorizing new stations at the rate of better than one per month during 1963. Currently we count a total of 261 operating stations. Of this total, some 228 are FM stations on reserved channels. There are 18 FM educational stations operating on unreserved channels. Of course, we have a steady figure of 25 AM stations operating non-commercially by educational institutions. I think one of the most dramatic proposals for the future development of educational radio lies in the possibility of establishing, on a step-by-step basis, a nation-wide educational system. This is an idea that has grown out of the extremely successful, but now ill-fated, Educational Radio Network in the eastern part of the country. Plans set forth by leaders of that network, plans under discussion for a number of years in the Midwest, plus some enthusiasm shown by the Committee on Institutional Cooperation of the Big Ten Universities plus the University of Chicago encourage more planning for the use of educational radio. Very shortly, we hope the CIC will launch a pilot project to show the feasibility and the possibility of extending radio's uses across the spectrum of educational needs. The NAEB will be conducting a seminar on the future of educational radio late in January here in Chicago. Again, we hope that we will see a dynamic development occur in a short period of time that will again prove the validity of the use of educational radio to meet some of the challenges confronting education today.

We have also noted an increase in the use of ETV in many areas of in-service training of adults. One of the more important developments related to adult education and in-service training is the programming offered by what I've chosen to call the new "breed"--those TV stations licensed to municipal governments. So far there is only one. In 1962 the Commission authorized the city of New York to operate a TV station as a non-commercial service on Channel 31. The city immediately embarked on a schedule of programs specifically designed for reaching city employees both while on the job and at home. An example of the effectiveness of this type of adult education station is the experience of the training officer of the New York City Fire Department who has been able to reach, simultaneously, all 15,000 members of the Fire Department in the 280 fire houses. The fire houses are equipped with television receivers to enable the employees to take part in on-the-job training via a series of television programs. Prior to this development the training officer needed a whole year to go from fire house to fire house presenting his particular subject in a regular training period. Today, a half-hour program repeated twice accomplishes virtually the same objectives in a more efficient and highly effective manner. I am sure that the city has been most successful in presenting valuable information to its employees in other fields, such as the areas of general welfare, public health, crime prevention, etc. I believe this indicates the probability of other large municipalities seeking television channels for similar use in other parts of the country. I would assume that the educational body of the United States would be in the forefront in proposing the further development of such services.

Some 40 states now have official ETV commissions, authorities, or councils, organized to assist in planning for the orderly development of ETV within their respective states. Some 27 states have submitted to the Commission full-blown plans for state-wide development of ETV. Others are being developed but have not yet been submitted to us. I examined the plans we have available and find that there are some 161 new ETV stations called for in the various state plans. Remember that there are still 23 states we have not heard from.

What we need, then, for the immediate future is a positive possibility of doubling the number of ETV stations within the next 18 months to 2 years. In fact, we can see approximately 40 new ETV stations on the air by the fall of 1964. In addition, we may look forward to the development of 161 new stations in the various state plans as well as an undetermined number of new stations not yet completely planned for but now in various stages of planning in the 23 states from which we have not yet heard.

To me the future is bright for ETV development. Further interest has been expressed by educators to the extent that I think we can look forward to the development of over 300 ETV stations by 1966.

However, there is a growing concern on the part of many regarding the growing shortage of trained personnel. Where are we going to get people to staff the stations as well as to staff the rest of the needs of the educational television establishment? At this time, there is no evidence to indicate that colleges, universities, or vocational schools, which normally have been the source of personnel, have launched any increased program of recruitment or training to begin to match the indicated growth of facilities.

The situation in educational television is truly one of robbing Peter to help Paul. Let me give you a case in point. A new educational television station, being sponsored and developed by the school system in Charlotte, North Carolina, had need for a Chief Engineer. There were only eight people who could be interviewed for that position, and it took an awfully long time to locate even those eight. On a national basis at the present time, we just don't find qualified chief engineers to staff these new and developing stations. I'm sure that many of you will be quick to recognize that this new medium faces a giant demand for the technical skills necessary to bring these new facilities into being. The state of Kentucky, with its dramatic proposal to bring on the air on one day nine, ten or eleven ETV stations is facing a monumental job in meeting technical staff requirements. This is not to mention the production and the administrative staff needed to handle this gigantic proposal.

In addition to the ever-present concern about personnel and financial resources, another concern of great magnitude is the possible shortage of high quality programming. Although the ETV industry relies on local program production for over 50% of its programs, both academic and cultural, the indicated lack of qualified personnel leads one to the assumption that additional production agencies or organizations will also have to be developed to meet the future program needs of ETV in the United States. We assume that the new structure of NET will enable local stations to improve their programming and staff and technical capabilities as the result of the availability of some $585,000 previously turned over to NET for affiliation fees from local resources.

However, I question whether even this substantial sum will prove to be sufficient to permit local stations to engage in the type and amount of programming necessary to meet local needs, to say nothing of the program demands at all other levels of ETV activity.

On top of this very discouraging note, permit me to say that we are now engaged in an enterprise which merits our best and greatest effort to insure its proper development. I believe you'll agree with me that the plus-values, inherent in education and especially in educational television, must be exploited in order that education's purposes not fail in the future. We must develop educational broadcasting in its broadest, not its narrowest, concept.

The increasing complexities of today's social, political, scientific, and economic structure requires levels of information and understanding as could not have been imagined even a generation ago. The scope of education today, of necessity, extends far beyond the classroom years to include continuing education of many kinds. It requires a degree of involvement in the community and state which makes it imperative that the investment in education be sufficiently adequate to increasingly undergird the national economy and our free society as a whole with an informed citizenry. Nothing other than adult learning can build the wisdom indispensable for the preservation and strengthening of our society. In a democracy like the United States, the basic social power has been entrusted to the people. Therefore, the people, you and I, as well as the other fellow, must continue to grow in our capacity to judge new ideas, to assess happenings in their true significance, and to judge the purposes and affects of legislation.

A Commissioner of the Michigan Employment Security Commission has said: "If you think you know all about something, you're old. If you believe you are now doing something as well as it can be done, you're old. If you're glad to admit that you know but little about these things, you're young." So I say, while we are all young, let's get on to the task of learning how we can best apply the great tools of television to the job of education this country has before it.

Chicago--December, 1963

ETV BROADCASTING NETWORKS

By
Hartford Gunn, General Manager
WGBH-TV, Boston, Massachusetts

ETV networks, as a topic, would allow us to roam over almost any field, including the national network, the regional network, and state networks. I'm going to concentrate my talk primarily on regional networks. To put it in some perspective, I want to talk for a minute about the national networking picture in educational television. The character of the National Television and Radio Center has changed substantially in the past few months. In fact, it is now to be called, as I understand it, National Educational Television, though its corporate name remains the National Educational Television and Radio Center.

The changes in NET that have affected us in educational broadcasting most have been, first, the reduction of new programming to essentially five hours per week; and, second the concentration on high-level, high quality adult programming. The latter change means the elimination of many potentially good and useful, simple production adult programs, such as how-to-do-it programs, etc., and, even more importantly, the elimination of all instructional programming at the elementary secondary and college levels. Those programs which NET has in its library, as I understand it, they will continue to distribute, but there are to be no new programs produced in either of these two categories. All of this adds up, as I see it, to the fact that we can look forward to improved NET programming, but in a restricted area, and in a restricted output. And, further, this means that we must turn our educational TV station's attention to other means of performing those program services which we in educational television and education consider important.

The question arises then, how can we accomplish these services? The answer, I think, is through state and regional networking and through the development of additional program agencies of which state and regional networks would be a part. As I said a moment ago, it is my purpose here to concentrate on the regional network aspect and the assistance it may provide in meeting the needs for educational television. In doing this, I would like to give you a case study of the development of our northeastern network, which is called the Eastern Educational Network, Inc. The Eastern Educational Network is a regional, cooperative association organized to raise the level or quality and increase the quantity of its members' educational television programming. The Eastern Educational Network's 11 affiliated educational stations in the northeast stretch from Washington, D. C., to Maine, and westward to the Ohio border. Some of these stations are community-supported; some are supported by state institutions and state funds; and some are supported directly by private colleges and institutions. All of them work together cooperatively to support this privately owned and operated, non-profit, educational network.

The areas served by this network include Metropolitan Washington, Philadelphia, Pittsburgh, New York City, Schenectady, Albany, Troy, Buffalo, Hartford, Boston, southern New Hampshire, and southern and central Maine. The Eastern Educational Network is an independent non-profit charitable corporation chartered in 1960. In addition to the above stations in the above areas, its membership includes two production centers, two areas developing educational TV facilities, seven state departments of education, and two national networks. That is, on its board it has a representative each from NET and CBC in Canada.

The member stations financially support the network by means of annual assessments, which range from $150 to $3000, depending upon their class of membership. Members also support the network by making available to it their best programming free of charge. This commitment of funds and program services is significant to the support and strength of the network. The powers of the Corporation reside in a Board of Trustees composed of and elected annually by the members. A small administrative and programming staff direct the activities of the Eastern Educational Network from its offices in Boston. The staff, at present, consists of an Executive Director, a Program Manager, a Traffic Manager, and a Secretary, with engineering and legal assistance retained as necessary.

The present annual budget is approximately $45,000 for the basic staff. We have a program research project of $140,000, at present, also attached to this organization.

There are five main activities of the Eastern Educational Network. First, its function is programming, including the distribution of instructional and adult programming from four sources: 1) the exchange of the members' own programming, the major source; 2) the acquisition of program material from outside sources, including the Columbia Broadcasting System owned and operated television station, the Metromedia television stations, WNBC-TV in New York, and other sources both here and abroad; 3) programs produced through cooperative production among the member stations; and 4) programs from Eastern Educational Network itself.

A second function of the network is in planning and establishing interconnection, the creation of a systematic plan to interconnect all member stations and state networks in order to stimulate additional program exchange and generation.

The third function is activation, consultation, and support on the development of new educational stations and state networks within the region.

The fourth function is to provide consultant services, such as workshops and consultation on production, administration, and engineering to further the improvement of personnel and facilities of its stations.

And finally, research and the demonstration of regional cooperation in the field of instructional television is the role of the Eastern Educational Network's Northeast Regional Instructional Television Library Project, underwritten by a contract from the U. S. Office of Education.

Each educational station in the network faces a limitation as do all educational stations, a limitation of resources, both financial and programming. The budget, staff, and facilities of these stations are finite, and the talent pool from educational and cultural institutions in their respective areas is also limited. Some stations accept these limitations and program sparingly, and so limit the possible impact on their communities. Some stations do not accept these limitations and seek methods of enlarging the vision of such stations as this that began the Eastern Educational Network, a cooperative pooling of resources, leading toward the increased production of significant educational television programming.

The concept is basically a simple one. Each station makes available to the network its best programming free of charge, whenever possible. The added programming enhances each schedule, provides for an exchange of ideas from community to community and increases the viewing audience for a worthwhile, locally produced program. Each station manager, then, can increase his program offerings, while decreasing his own production load. The money thus saved is used for special local programming, which could not otherwise be undertaken, and for the additional production of programs for the network, thereby multiplying a gain for all stations. Distribution of the network is carried on a simultaneous, live, inter-connected basis over seven of the eleven member stations, namely, the stations in New York, Schenectady, Hartford, Boston, Durham, Augusta, and Orono. Distribution is accomplished by recorded means to Washington, Philadelphia, Pittsburgh and Buffalo.

A word about this distribution: simultaneous, live distribution averages over a thousand hours each year of programming. The programming ranges over fields such as news, public affairs, performing graphic arts, commentary, science, social documentaries, sports, and instructional programming. It is made possible by a combination of inter-connection including off-air pick-up, private microwave and leased common carrier facilities. The coordination of this live network is by teletype communications. All state microwave and proposed inter-connection systems are designed for regional network inter-connection and usage.

The recorded distribution is accomplished by video tape recordings shipped via mail. Video tapes are being supplied by both the stations and the network, in the form of a tape pool.

Some observations may be in order regarding our Eastern Educational Network experience. First, the programming of all Eastern Educational Network stations, as I see it, has been improved and expanded, particularly that of the smaller stations. But the improvement and the expansion of programming has been noticeable even in New York and Boston which, at the moment, are the largest stations in the Network. And these stations have benefited especially in the areas of instructional programming and public affairs programs which would not otherwise be available.

Secondly, the Network itself has made possible the construction and operation of at least two stations by supplying a major program source without which the cost and operation of these two stations could not be justified.

Thirdly, the traditional barriers to the exchange of in-school instructional programs, as I see it, have turned out not to be as great as I was originally led to believe. The Network has made possible the exchange of quality in-school production. We have found that not only can we distribute instructional programs, but also that we can agree on curriculum matters, and we can produce to specifications that will satisfy a ten-state region. Other less obvious advantages and observations on the Network are that this network provides the climate and room for experimentation and the creation of new program ideas. It encourages the development of new talent and financial resources through offering a larger audience than a single station can command. It acts as a counterbalance to the single national ETV network, NET. It presents a greater diversity of opinions, and acts as a buffer against pressure on local stations. It helps to develop local station production, engineering and audience promotion skills through multi-station cooperation and the setting of standards. It provides a safety valve for the ambitions and causes that cannot be satisfied by a single national network, but which can be worked out successfully on a regional level.

If we look to the future, we have proposed an inter-connection system, which, if a line be drawn from Montreal to Washington, D. C., will inter-connect virtually every state in the region. Then, if you proceed from Washington, D. C., we see a possible connection with the Southern Regional Network. Beginning at Montreal, we see a possible inter-connection with the Canadian Broadcasting Corporation's French and English language networks. And then, looking westward from Philadelphia and New York and the proposed statewide networks, we see a line running westward with which we would hope could inter-connect with a midwestern network.

Frankly, I've been a little disappointed in the slowness with which state, and particularly regional networking is proceding in the Midwest. I don't know the reason, but maybe there is a feeling that the Midwest has all the programming and financial resources needed to perform a first-rate educational television service for its institutions and the general public. If this is the feeling, I suggest that the Midwest look again at what its neighboring states are doing and what some regional networks are doing.

I would like to close by making a plea that we give serious consideration to the furthering of the development of state networks and that these state networks be designed in such a way that they can and will lead to the development of regional networks. I think it is an inevitable next step that these regional networks will proceed with inter-connection themselves and thereby create, eventually, a live, national, inter-connected network, providing supplementary program services which would not otherwise and cannot otherwise be made available by the present national educational television system.

Chicago--December, 1963

CLOSED CIRCUIT TELEVISION IN AMERICAN EDUCATION

By
Burton Paulu, Director
Radio and Television, University of Minnesota

Closed circuit television is used at all levels of American education from kindergarten through college. It is difficult, however, to determine its exact extent. The term "closed circuit television" is variously defined, and in any case, figures become outdated as soon as they are printed. But there are at least 200 elaborate closed circuit systems in operation, some of which produce more hours of live television than do most television broadcasting stations, plus many image-magnification installations.

As its name suggests, closed circuit television is a closed or private communication, the signal being sent by cable or micro-wave to selected locations. Since it is impossible for closed circuit television to be received except on sets connected to the distribution system, it has great appeal for teachers who do not wish their presentations to be broadcast. In addition to this, however, closed circuit has some other advantages over broadcast television. It is capable of better picture quality; it frequently is less expensive, particularly if the simultaneous transmission of a number of presentations is involved; and there is no shortage of spectrum space, as with broadcast television.

A closed circuit installation may link an originating point with one viewing room in the same building, or with many rooms in distant cities. For example, in Washington County, Maryland, 44 public schools receive lessons over a six-channel coaxial cable; at the University of Minnesota, closed circuit television is used to teach students on three campuses in Minneapolis and St.Paul; there are television connections between Purdue University in Lafayette and Indiana University in Bloomington; and in Texas, 11 institutions in different cities are inter-connected.

The most elaborate system is in South Carolina, where closed circuit television connects 155 public high schools, four private colleges, four state colleges, the University of South Carolina, and five extension centers. The eventual goal of that project is six channels of transmission serving 725,000 school and college students, with programs from 8:00 a.m. to 10:00 p.m., providing the possibility of 84 hours of instruction per day. Unique in objective was the Chelsea Closed Circuit Project which fed specially-produced programs to 650 receivers located in a neighborhood center, a school, and several apartment houses in a section of New York City populated by many colored and Puerto Rican families of low socio-economic status.

The principal uses of closed circuit television follow from some of the major problems now confronting American education:

1. Large Classes. Through a combination of live presentations and video tape repeats, large classes can readily be taught by closed circuit television.

2. Space Shortage. Television can help solve the space shortage, especially the shortage of large classrooms and auditoriums. A college may have few rooms seating 500 or more students, but surely will have many with a capacity of 50. Ten of these rooms could accommodate a class of 500 if taught by television, and at other times could be used for smaller groups.

3. Teacher Shortage. Television can help solve the problem of the shortage of teachers, the shortage of outstanding teachers, and the shortage of specialist teachers. Through a combination of live presentations and video tape repeats, teachers can be made available to more students at more times. By thus being relieved of teaching some classes, teachers may have more time to meet with students, either privately or in small groups.

4. Geographical Separation of Teachers and Students. Television can link students and teachers who normally are located in different places. Thus, university students in Bloomington can be taught by professors in Lafayette; and elementary school students in a remote South Carolina town, by teachers in the state capitol. The University of Minnesota has begun by linking its several Twin City campuses, and hopes eventually to teach from Minneapolis, students in Duluth and Morris, each of which is over 150 miles away.

5. Improved Instruction. By selecting the best teachers, giving them more preparation time, and offering them a wide range of visual aids, closed circuit television often leads to greatly improved instruction.

6. Observation by Television. Through television, a large group may watch a demonstration without intruding on the participants. Demonstration teaching is the standard example, although one also might suggest other examples such as the recording of the administering of an intelligence test to a three-year old child, who reacted charmingly and naturally, even though later seen by 800 students via video tape.

7. Audio-Visual Aid. Certain courses benefit from television's magnification potentials. The most dramatic examples are in dentistry and medicine, although television is equally helpful in bringing map details to a geography class, or a close-up of a measuring instrument to science students. In addition, closed circuit television can distribute still pictures and films from a central distribution point.

8. Economy. Some large-enrollment classes may be taught more economically by television. Although the better teaching of more students, rather than economy, is the proper objective. When classes are large enough 250 usually is given as the break even point--television teaching may be less expensive than conventional teaching.

Although some people assume that closed circuit television is an all-or-nothing affair, this is not the case. In certain situations, the whole presentation may be by television, especially if the course normally would be taught by the lecture method. Usually, however, there is some combination of television and small group instruction. The lecturer may address the entire class two or three times a week, with students meeting for group discussions one or more times. Or, within a single period, the television teacher may leave time for his assistants to work with the viewing sections. It also should be noted that some classes may use television only occasionally--say once a month or even less--to present materials especially appropriate to the medium.

The list of subjects that have used television successfully includes most of those taught from the lowest grades through the university level. At first, those courses with visual aspects might seem "naturals," but experience has shown that an imaginative teacher and producer can develop effective television presentations in almost any field.

Although educational administrators tend to welcome closed circuit television as a solution to some of their problems, the teachers, traditionally conservative about new media, often approach television with hesitation and doubt. In addition to concern over the absence of direct audience feedback, some professors have feared technological unemployment, and a few even have suggested that television could be used by administrators to eavesdrop on their work. All this has required those responsible for closed circuit television to be diplomats as well as educators.

Various expedients have been tried to solve the problem of the invisible student. Some teachers have brought students to the studio; but since this tends to interfere with production routines, experienced teachers often prefer to assess student reactions from memory, arrange periodic meetings with students, rely on reports from assistants, or go on the basis of camera crew reactions. In other cases, cameras have been installed in classrooms, although this too has created production problems, coupled with the disadvantage that the teacher may become so absorbed with the students before him as to forget his larger television class. But there are no hard and fast rules; all these things have been tried, and each teacher must do what he considers best.

Fears of technological unemployment clearly are not justified. The work of preparing television lectures and of revising them later when they are repeated from video tape, plus the need to meet with students, leads to shifts in the schedules of television teachers, but not to any reduction in their total work load. The increasing use of video tape repeats has raised questions about residual rights. An elaborate study just completed at Michigan State University brings together facts and theories about the rights and prerogatives of television teachers. The National Education Association also has considered this problem, and has compiled a statement "Professional Rights and Responsibilities of Television Teachers." Publications of this sort should expedite the standardization of procedures.

Student reactions to closed circuit television usually are favorable, once the alternatives are realistically posed. Almost anyone would prefer to be among thirty-five students with a first rate "live" teacher than to have the same teacher on a television screen; but the choice--at least for large enrollment courses--usually is between small groups viewing television or large groups in lecture halls, with the television groups often receiving better presentations from superior teachers.

Much research has been conducted on closed circuit television teaching. The techniques used may not always measure non-factual learning, but they do support the following conclusions.

1. Students learn from television teaching. Many comparisons of matched groups have indicated "no significant difference" between conventional and television teaching, and television teaching has been found to be superior more often than inferior.
2. Certain types of instruction are improved by television, particularly those in which visualization plays an important role.
3. On the whole, those teachers whose classes are suitable for television are pleased with it.
4. Given a choice of closed circuit television or large lecture sections, most students prefer television.

Like all new media, television has suffered from the excessive zeal of some of its supporters, whose unwarranted claims occasionally have produced negative reactions. But let us put prejudice aside, and begin by identifying the basic problems of education, then evaluating all methods of instruction to see which best solve these problems. One method may be closed circuit television; but we must not overlook broadcast television, radio, all sorts of recordings--film, sound, and still pictures--the many kinds of printed presentations, lectures, class discussions, and all the rest.

From these, we should select that combination which is best for a specific situation. Closed circuit television surely has a great deal to contribute. We must not rule against it just because it is new, nor should we let the extreme claims of a few ardent proponents jeopardize its cause. We need balance of judgment in order to decide just what closed circuit television can do for education in each situation and at each level.

Chicago--December, 1963

AIRBORNE TELEVISION SYSTEMS

By

Benjamin Bohnhorst, Acting Vice President
Midwest Program on Airborne Television Instruction

I'm especially grateful for the opportunity to talk about the Airborne Television in terms of concept. Allow me, if I may, to concentrate as best I can on the concept of the system and mention little, of nothing at all about the techniques of operation and the several things we've done in the MPATI program. I also would like to concentrate upon this concept as it has developed in our Midwest Program and give minimum attention to the other aspects of the concept such as the applicability of the airborne system to other parts of the country, to underdeveloped foreign areas, and as a possible prototype for satellite communications.

Westinghouse Electric Corporation, in the report entitled, "Educational Television Distribution, Report No. AA3754," discusses the various means of transmission including an airborne system on a nationwide basis. The interest of this company is representative of the kind of interest that has been recorded for using the airborne system in other parts of the country. There have been one or two other regions that have given at least tentative or casual interest in the application of this system to their areas. Missouri and Texas are two of these regions.

I think, in all candor, we ought to realize this system may or may not be applicable in other parts of the country. It may become increasingly clear that what is central to this concept is a system for finding a sufficiently broad base of resources, talent and money which can be pooled to do the tasks that we set out to do. It may be that certain parts of the country, or regions of the country, are too sparsely populated, for instance, to make this kind of system an economic and feasible approach. Also, in the Midwest we have been able to mount this system in a circular or signal area that has a kind of functional relationship to itself. Now, in California, and functionally that state is strung up and down in a long north-south orientation, with most of the population concentrations along the coast and along most of the inner edges of the mountains and desert, to impose a circular airborne television pattern on that area may not be appropriate. Topography, itself, in the mountainous areas might create special difficulties in providing signal strength down in the valleys and over the crests, because after all, an airborne system is a line-of-sight system, and shadows create difficulties.

Let me turn to other parts of the world. It was very much a part of the original concept of airborne television that this system might very well indeed have applicability overseas, particularly in underdeveloped countries. There, again, has been some informal, casual interest in one part of the world or another, but no concrete negotiation or planning is now underway in this regard.

So far as satellite communication is concerned, a document entitled, "Demonstration Broadcast Satellite," prepared by the General Electric Corporation is worth reading. The authors of this report were visitors to the MPATI program recently to share their thinking with us and to explore with us whether or not there might be some mutual interest between the MPATI project and the demonstration they are proposing in their report. I think the General Electric people may have been particularly interested in MPATI as a source of programming but, also, in our experience in placing an airborne telecaster into the air, and from a single source accomplishing simultaneous channel broadcasting of instructional materials.

But let me concentrate on the concept as it has worked out in the midwest area itself. I would like to make one or two preliminary remarks and then discuss the concept in terms of an analysis of the educational crisis that we are facing in the twentieth century. It is such an analysis of that crisis which stimulated the generation of the concept in the first place. I would like to characterize some of the features of this concept, and then I would like not to leave this podium until I have pointed out that the concept that we have to discuss is now at issue before the FCC with the recent issuance of a notice that the FCC would rule on an application that MPATI filed last January.

There is a basic question underlying the whole issue. I would like to borrow some phraseology from Walter Stone. I think the basic question is: Can instructional television really successfully become of education, rather than merely in education? Can it really?

It is exciting to hear all the things that are happening up and down the country. This may be the unwelcome question: Is it enough? Well, I think the answer to the question is yes. Yes, it is enough in terms of the heroic efforts devoted to this project and in terms of the potentials within the framework in which we presently operate. But I want to ask the question again, is it enough, in terms of the problem, in terms of the need, in terms of the situation that we are facing? I would like to ask the basic question in a couple or three ways.

Can instructional television successfully become of education until we have multi-channel service sufficient to handle the numbers of students that we are trying to serve, and not only the numbers of students, but the scope of curriculum needs that this multitude of students has? Are one or two channels available in any given school enough? Can instructional television successfully become of education until we have, or have some prospect of getting, ample high quality programming--emphasis upon quality?

Can instructional television become of education on a multi-channel basis, with ample high quality materials, in a manner, and at a cost that we can afford? We need quantity, both in terms of numbers of students and scope of curriculum. We need quality, without question, and we need it on an economic base that we can afford.

Well, first, let me speak of some of the preliminaries. I would like to recite where MPATI stands with respect to some of the steps that have been taken. As you know, airborne was tooled-up in 1959. The period from 1959 to 1961 was in effect the tooling period. As has been mentioned, when we began demonstrating telecasting on a full schedule basis in 1961-1962, MPATI had been up until that point a private, experimental project. It became incorporated as a non-profit corporation in the state of Indiana in January of 1962. We had our first meeting of members of the corporation about a year ago and elected our board of directors. We applied for regularization of airborne telecasting and 4-6 channels last January. On October 24, I believe the day was, the FCC issued its notice that it would make a rule on the MPATI application. These are the steps we have gone through.

But let's look at the concept now. First, the analysis of the crisis in education, the particular analysis which gave birth to the airborne concept. We have heard a lot, and it has become commonplace, about the explosion in population. Nothing more need be said about that, except to point out that this explosion in population, in our student population, in particular, places a tremendous drag upon our educational enterprise. We have also heard, and usually mention separately, about the explosion in knowledge. John Goodlad in the Saturday Review, recently sought to describe this explosion in knowledge. He stated, as I recall it, that it was around 1750 that knowledge had doubled from that available at the time of Christ, and by about 1900, it had doubled again; that by 1950 it had doubled again; and by 1960, it had doubled again; and it looks like it may more than double by 1970. This is the kind of geometric progression in the discovery and accumulation of knowledge that we are experiencing in our mid-twentieth century. This, too, places a tremendous drag, a tremendous challenge, upon our educational enterprise.

A third factor in the analysis of our contemporary crisis is the fact that being the twentieth century, and given our system of education and the way we finance it, available funds for education are becoming less and less available. It is harder and harder to get tax bills passed. It is harder and harder to find the funds to operate our educational enterprise. Our analysis that generated the airborne system put these three factors together into a single analysis. It recognized that all three of these factors are colliding in the mid-twentieth century. We have this double drag on the educational enterprise from the population increase, the demands for increased quality, and the explosion of knowledge at a time when, even though education is bound to cost more, it is going to be harder to find the additional moneys. So the question, how can you meet the demands for quality and quantity in the most economic and efficient and effective manner with a minimal increase in costs?

The airborne system was devised as a system that could confront this crisis with a single approach--using airborne transmitters to cover quantity. With multi-channels, the scope of the curriculum could be embraced, quality could be improved and resources of time and money could be pooled. All of this could be organized on such a broad base that the cost to any particular locality would be minimal. So all three factors were envisaged in the origin of the concept. The operations have been carried out in faithful pursuit of the concept; MPATI has gone through certain stages of maturity, but, still, it is by no means a mature concept.

I like to think of the project as having passed through periods of conception, gestation, and birth in the tooling-up process. Then, the demonstration period and the first year of broadcasting were its infancy and childhood. I believe it is fair, now, to look upon the MPATI project as a fairly lusty adolescent, but it has the rocky road of adolescence to go through before it reaches maturity. Someone commented about adolescence the other day, that it was characterized by rapid growth and development between the ages of 14 and 17; during which many parents have been known to age 20 years. We are aging about 20 years as we work with this fascinating project right now.

Well, now, having indicated this as the origin of the concept and that behind the concept lies the three-fold crisis of our times, let me suggest four key features of this concept. First, I should like to suggest that the technical system, the airplanes and all the hardware in itself is not the important thing. It is important only insofar as it makes it possible to organize a public instrument for dealing with public problems--an educational enterprise to deal with educational problems. By mounting the antenna at a height of 23,000 feet it becomes possible to serve a region and to create and organize a regional system that can pool its resources of talent and money, to achieve high-quality programs in ample quantity at minimum cost to the individual consumer. So the technical system is not in itself the important thing.

The second feature of the concept is that the problems of program supply, of program quality take particular precedence over the technical system. Hence, the need for a multi-channel service is symptomatic of the underlying needs for quantities of quality.

The third feature of this system is that it has a potential to serve as a multiplier mechanism. Sometimes I think there are quarters in which the airborne system is looked upon as a voracious beast that wants to gobble up channels. Sometimes one thinks of Henry VIII ripping the vest apart and gobbling off the breast--you know, this kind of belching and burping image. On the contrary, this system can be related in image and impact to the TVA and its effect upon the south. There were some dislocations in order to implement TVA, but the economic development, the cultural development, the educational development, indeed the defense development in World War II that generated from TVA indicated it as a model of the sort of thing that can multiply beneficial effects on all sides. This sytem, either in this region, or wherever, ought to be able to operate in such a way that it fosters the development of ground-based instructional television operation. In the Chicago area, there is station WTTW, Channel 11. WXXW, Channel 20, will be in operation in September. What we have in view here is a cooperative plan for schools in the Chicago area to obtain a four-channel service beginning next year. With coordinated planning of reception from the MPATI sources and the ground-based sources in this community, maximum economy should be realized for the schools in the area. A similar plan is under consideration in the Cincinnati area. It may have the prospect for putting WCET, which has certainly been one of the pioneering stations in the country, on a sound financial footing. It is for this purpose that we are entering into the cooperative plan proposed in Cincinnati.

The Kentucky network is very much interested in cooperating with the MPATI operation. I think we have a memorandum of agreement signed with the state department of education in Kentucky. I think I interpret the developments as meaning that the Kentucky network has seen again that one of its major problems is a financial problem and that it's going to cost them a whale of a lot of dollars to build the hardware system that represents their state-wide network. MPATI is a source of programming which, in this cooperative arrangement, can help out Kentucky with the development of its network. Indeed the contemplation is that programming to supply a network of state-wide scope may cost as much as, to place the figures in the same ball park,as the cost of the hardware itself. The production centers that are involved in a regional system of this kind have benefited from the participation. A regional system of this kind can practically and feasibly create the library of quality materials that shall be needed. I hope that something of this sort will develop. A sharing of channels between ground-based and airborne operation so that a given channel allocated to the region can be shared in the daytime hours with an airborne system, and programmed in the afternoon and evening hours from the ground bases.

But now let me point out this concept is at issue before the FCC. Mention has been made of the July ruling regarding the 2500 megacycle, instructional fixed service availability. This means that the FCC, as I look at it from where I sit, is attempting to respond to the multiplicity of needs of the community and of the nation as a whole. They are making provision for multi-channel service provision for the commercial broadcaster, or proposing to do so for the nation as a whole. But the issue, as it is posed for consideration with respect to the MPATI six-channel application, is whether or not a multi-channel service on a regional basis for the pooling of resources on a broad base is in the national interests. At least this is the way I see it. I commend to your attentions not only Docket 14229 but, also, Docket 15201, the notice of MPATI application.

ETV DEVELOPMENTS IN THE UNITED STATES BY REGION

Northeastern States

By
Hartford Gunn, General Manager
WGBH-TV, Boston, Massachusetts

Activation of new ETV stations in the northeastern region of the United States is increasing. We have a number of stations in the planning stage and quite a few stations in operation.

Running down through the states: In Maine, WCBB, Channel 10, is on the air and is owned and operated by Colby, Bates and Bowdoin Colleges, under the name of the Colby, Bates, Bowdoin Broadcasting Corporation. In addition, in Maine, WMEB, Channel 12, began operations in September of this year. It is owned and operated by the University of Maine. WMEB is the key station of the Maine state network, which, when finished, will include not only WCBB and WMEB, but WMEM in Presque Isle and WMEC in Calais, providing a complete state network. This Maine state network is connected to our regional cable educational network in Boston by means of private microwave which runs over 300 miles to provide the service for the state.

In New Hampshire, we have a station, WENH-TV, in Durham. It has been on the air since 1959 and is under the control of the University of New Hampshire. Present plans of the university are to increase the power of WENH-TV in the coming year and to provide a complex system of translators and satellite transmitters to provide complete state wide coverage within the next three years.

In Vermont, the bond issue before the state legislature for the construction of an educational television network was defeated last year. The University of Vermont continues its planning, however, and is now working on a proposal to present to the next legislative session in 1965. We think it has a better than average chance of passage.

In Massachusetts, WGBH-TV has been on the air since 1955 and will move into its new $1,400,000 physical plant in June of 1964. Proposals are now underway for a second educational television station in Boston, and the Twenty-One Inch Classroom, the school broadcasting service in Massachusetts, has installed satellite translators in the western part of Massachusetts to provide coverage in the Connecticut Valley area of the state.

Rhode Island is planning for an ETV station to be completed in the next one to two years. The proposal goes before the legislature in January, 1964.

Connecticut, Channel 24, WEBH, in Hartford, began operation in September of 1962, and serves all of central Connecticut. A satellite transmitter is being installed in New Haven, and several others are planned to provide nearly state wide coverage.

In the state of New York, there are three ETV stations in operation. The first, WNED-TV, Channel 17, is in Buffalo; the second is WMHT, Channel 17, serving Schenectady, Albany, and Troy; and the third station, WMDG, is located in New York City, but licensed to Newark, New Jersey, and serving northern New Jersey, metropolitan New York, and southern Connecticut. Planning is already underway in the state of New York for additional ETV stations in Rochester and Syracuse, and ETV Councils have been active in the cities of Corning, Binghamton, Watertown, and Utica. There is a possibility of stations being activated sometime in the next five years in those cities as well.

Pennsylvania has become increasingly active. WQED and WQEX in western Pennsylvania, Pittsburgh area, are the oldest stations in the region. They are now supplemented by WUHY, the UHF station in Philadelphia, and WHYY, the new VHF station in Philadelphia. The latter is a maximum power station licensed to Wilmington, Delaware, but serving the Philadelphia area, southern New Jersey, and most of Delaware. Future plans in Pennsylvania include the activation of Channel 3, Clearfield, operated by the Pennsylvania State University, and additional stations to come along in the cities of Erie, Harrisburg, and Allentown.

In New Jersey, the New Jersey Educational Television Corporation plans a state wide network. Until the activation of that network, which seems to be some years in the future, they are actively cooperating with WNDT in New York and WHYY in Philadelphia, which serve a major part of the state.

Delaware, as we mentioned a moment ago, is the home of WHYY, and is served almost entirely by the joint Philadelphia-Delaware-New Jersey station, WHYY, whose studios are in Philadelphia and in Wilmington.

The state of Maryland has a proposed state wide network, with plans to activate the station in Baltimore as the first step. The plans are still being worked on; as far as I know, there is no on-the-air date proposed for the Baltimore station or for the proposed state network.

The District of Columbia is the home of WETA-TV, the community station in the district. It cooperates closely with the surrounding states of Virginia and Maryland, and is actively engaged in increasing its power and improving its facilities to provide better coverage to the district and service to the surrounding states.

Just one or two observations before I close my report on the Northeastern section. Becoming obvious to all of us in the northeast is the growing importance of networks, first on the state level and, of course, on the regional level. We have one complete state network virtually in operation in the state of Maine, which incidentally is one of our poorest states. It's interesting to see that where the financial needs are such and the resources of the state, both financial and educational, are limited, the importance of networks comes strongly to the fore. It is interesting and, I think, significant, that Maine is the first state in the northeast section of the United States to have a complete state wide inter-connected network, and a network, by the way, which is capable of origination at two points. While controlled from Orono, the home of the University of Maine, there is provision for the creation of programs down in the Portland area some hundred miles or so to the south, as well as at the University. In addition, all of these state networks--this is again seen in the development of the Maine state network--are being designed for regional interconnection.

Another observation on the developments in the northeast is the growing importance of the activation of a second channel in major metropolitan areas. Already in Philadelphia and Pittsburgh, Pennsylvania, we have a second channel on the UHF band, supplementing the main channel, VHF. WNDT in New York City plans a second channel and we already have a second piece of paper on its way to the Federal Communications Commission asking for a second channel for Boston. So I think it is a significant development in the northeast, that in these major metropolitan areas, we are more and more coming to the second channel in order to handle the complete needs of sizable populations.

In conclusion the northeastern sector of the United States is certainly one of the last areas in the country to get the religion and develop educational broadcasting for radio and television, but it seems to me that the activity that has taken place in the last couple of years, coupled with the planning that is now going on, indicates that the northeast section of the United States will assume a role at least comparable to other sections.

Chicago--December, 1963

ETV DEVELOPMENTS IN THE UNITED STATES BY REGION

Southern States

By
Edward P. Wegener, Director
ETV Department, Auburn University

Well over a third of the educational TV stations in the United States are found in the 16 states we call the Southern Region. This goes from Texas to West Virginia. And this is only a start.

I think the important thing to know regarding ETV development in the south is that it is no longer just a convention subject for a few enthusiastic educators and practitioners. In our region, the message has reached the believing ears of the power structure of the several states. People who make things happen are now engaged. The Tennessee legislature did vote a million and one-half to finish the state network this year. The Kentucky legislature voted to build an 11-station network. The Alabama lawmakers gave the Alabama ETV commission another half-million to add to Uncle Sam's to further enlarge the four-station network in Alabama. The Arkansas legislature shelled out $850,000 to get things started in Arkansas.

When I attended an SREB regional meeting last year in Atlanta to continue our regional considerations in ETV development, I could recognize only a few of those people around the table. In previous meetings it had been broadcasters and educators. Last year administrative level folks from universities, a bank president from Richmond, Virginia, state ETV commission representatives, even a legislator or two were there. The change in the cast of characters seems to me to be one of the significant changes I would like to report on concerning our region.

Now, let me come 90 degrees around and start all over again. I have thought of calling this report, "go south, young man, go south!" If there is a frontier left in America, it is down South. The excitement does not lie alone in the rate of growth of educational television in our region. It is true that Alabama, next to the poorest state in the country, poorer yet than Maine, built the first state network and continues to enlarge it. True, we have more than a third of the stations in the south, but will be closer to one-half when Kentucky gets its 11-station network on the air. But I'm not a bricks and mortar man, rather a kilowatt and coverage addict. I think more of "who" and "what" are going on in these stations.

Now, I could bore your ears off with the bread and butter programming that goes on, and I am completely committed to bread and butter service programming, because I learned well during my professional life in land-grant colleges and for 11 years under the tutelage of Dick Hull at Ames. I would rather point out for you a couple of people we call our own in the south and tell you why I think they make it exciting. Ken Christiansen is director of broadcasting in Florida. He is a hard-thinking, hard-talking, no nonsense kind of person who always questions and tests our premises for ETV activities and projects. George Hall at Raleigh, North Carolina, is trying an idea that throws out all the cherished trappings of a TV show, all the theatrical distractions in order to make of the receiver a flexible teaching machine. Our imaginative friend over in Athens, Georgia, produced, with a ridiculous budget, one of ETV's most provocative and shaking-up series called the "Basic Issues of Man."

Somebody is always reminding me that we have doubled man's supply of knowledge in the last few years. That's supposed to mean that we must educate more and better, but it doesn't touch things we have known for 5,000 years and still haven't taken unto ourselves. That's a better reason to have television in education. We know in the south that we all need education. We know it very painfully, not only in the fresh knowledge but in the old and long-known as well. As long as a student radio announcer in a little commercial station in Auburn can report a truckload of sheep overturning in downtown Auburn and tell the folks that "ee-wees" were running all around the street, and as long as a newspaper reporter in a New Jersey city can take a picture of our President Johnson and General DeGaulle down the street, and only find five out of 50 people who can identify the two men, then we need education just to survive as a self-governing people.

In West Virginia, there are no stations on the air now. Plans are afoot for two stations within a year, and it is possible that novel arrangements with private antenna cable companies will be worked out for the remaining coverage.

In Maryland, I include the Washington, D.C. ETV station. In addition, Hagerstown has its county-wide closed circuit system and three stations are projected as well as an eventual six station network.

Virginia contemplates the construction of a state network. Richmond seems to be about the next station ready to get on the air. The people who really move things are beginning to be involved. For example, the president of a bank in Richmond is very deeply involved.

In Kentucky funds for advance preparation for the 11-channel state network have been requested of the Legislature; one station at Louisville is on the air.

North Carolina has at present one transmitter, WUNC-TV, being fed from three of the state universities in the state university complex. Other stations are being planned.

In Tennessee, Memphis and Nashville are on the air. Chattanooga will probably have a station on the air in another year. Channel 2 in Sneadville, will be a station of wide coverage. It will reach as far as the state university of Knoxville and will be fed from studios at Knoxville and from East Tennessee State College.

In South Carolina, there is a thriving closed circuit operation reaching into every county in the state. Two additional station locations are projected.

In Georgia, Athens, Atlanta, Way Cross, and Savannah are now on the air, and another on the western border at Pine Mountain, will be the next station on the air. It will be UHF, as are most of the rest of the stations in the state.

In Florida, two stations in Miami, and one each in Tampa, Gainesville, Jacksonville and Tallahassee are operating. They run a network by tape, though there is one interconnection between Jacksonville and Gainesville.

In Alabama, there are four transmitters on the air. A fifth is just about ready to go in Mobile.

In Mississippi, Mississippi State College, Channel 2, very likely will be the first one to get on the air.

The University of Arkansas has inherited a president who was well trained at Auburn and is committed to educational television. I expect that Arkansas will very soon start moving. The first station will not be in one of those places where you might expect it--Fayetteville or Little Rock. It will be a little town west of Little Rock where they have inherited a defunct commercial station and are planning to activate it for educational use.

In Louisiana, two stations are now on the air, and one is projected.

In Texas, five stations are now on the air and three more are projected.

This is a pretty fair appraisal of what our region will look like in the five-year period.

ETV DEVELOPMENTS IN THE UNITED STATES BY REGION

Central States

By
John Schwarzwalder, General Manager
KTCA-TV, St. Paul, Minnesota

An extraordinary amount of effort and activity has been apparent in ETV these last five years in the central states of the United States.

In North Dakota, a station in the Fargo area is prepared to go on the air in January of 1964. It will cover a great deal of Minnesota as well. The second station will cover Grand Forks, Fargo, and a very, very large area of the eastern part of South Dakota. It is scheduled to go on the air in late 1964 from a tower which is 2,073 feet tall, the highest tower in the country. The tower, incidentally, was built for a commercial station, which has made plans to put this Channel 2 operation on it. Plans for a state network are now being considered by the office of the Superintendent of Public Instruction there.

In South Dakota, KUSD-TV in Vermillion has been on the air for two and one-half years and has been a pioneer in the establishment of the Southeastern South Dakota ITV Council consisting of ten public school districts. A survey and report looking toward the establishment of an ETV network for the entire state is now in the hands of the printers. Legislative study will follow immediately, and it is hoped that legislative action to begin activation of such a state network will be taken in early 1965.

In Nebraska, in addition to the ETV activity at KUON-TV, which is one of the oldest and strongest ETV stations in the nation, a survey and report looking toward the establishment of a Nebraska state ETV network has recently been completed. This report resulted in action by the legislature by a margin, incidentally, of somewhere around four or five to one, which established a state ETV commission. The legislature also appropriated $600,000 towards the activation of the network. The Nebraska Council for Educational Television has pioneered in the cooperative presentation of in-school credit courses.

In Kansas, the legislature failed by just one vote in one house to approve a state wide plan for educational television. However, a municipal college in Topeka and the state college in Wichita are now looking toward the establishment of an interconnected network of ETV stations in that state. In addition, public school use of ETV in Kansas, which goes back at least five years, is steadily increasing through the cooperation of commercial channels. Throughout the region one can find commercial channels cooperating in the presentation of in-school courses.

In Minnesota, in addition to a strong educational television station in Minneapolis-St. Paul which broadcasts programs for 61 school districts, 18 colleges and universities, other ETV actions during past years are now about to bear fruit. A new station on Channel 8, in Duluth-Superior will go on the air in early 1964 and will be interconnected with KTCA-TV in St. Paul. Funds for the interconnection will be granted by a foundation. The necessary funds in Duluth-Superior have been raised and deposited in the banks. In addition a station on Channel 10 in the west central Minnesota area will be on the air in late 1964. The legislature had already made a small appropriation for that one and it will be interconnected with KTCA-TV.

There is a study sponsored by the NAEB and the Hill Foundation now underway to determine the feasibility of establishing an ETV station in the Austin-Aberdeen, Mason City, Iowa, area. North St. Cloud State College has asked for reservation of a UHF channel in the area of north central Minnesota. Plans for interconnection of all these stations are well advanced. And finally, the Twin City Area Educational Television Corporation, which operates KTCA-TV, has applied for a construction permit for a UHF station in the Minneapolis-St. Paul area, since the facilities of one channel are no longer adequate for all the institutions which wish to use the station.

In Iowa, KDTS-TV in Des Moines is an outstanding public school station. In addition, seven north central Iowa counties have done excellent ETV work on a commercial station during the past four years. WOI-TV, a commercial station owned by Iowa State University, continues to program "Iowa Schooltime." WOI-TV was a pioneer ETV outlet. In large portions of Iowa, schools and many colleges are expected to be served by ETV stations located in Nebraska, South Dakota and Minnesota. They have indicated their willingness to support and participate financially in the programming of such stations. Here again, I think, is something worthy of note--the financial participation in ETV programming that goes well beyond state lines. Wisconsin schools are actually sending money in to Minnesota for the purpose of helping to produce TV programs. Iowa schools are giving money to Nebraska for that purpose. All over the region we find that state lines are not much of a barrier.

Missouri supports two ETV stations: one, a community station in St. Louis, which is used by many of the schools and some of the colleges of the area; another, a public school owned station on UHF, is in Kansas City. The latter is doing excellent work in in-school programming; the former concentrates to a large extent upon cultural programs, although it also serves in-school purposes. In addition, the University of Missouri in Columbia operates a commercial station which programs a considerable amount of educational television, records courses which are used elsewhere and trains personnel for ETV.

In Michigan, there are stations operating at present in Detroit and East Lansing, with translators in Onnandago, in western Michigan, and in Mt. Pleasant. The Detroit station is cooperatively owned and operated by the Detroit Public Schools, Wayne State University, and the University of Detroit. Its schedule has increased during the past year, almost doubling in that time. It devotes most of its time, but by no means all of it, to instructional programs.

The station in East Lansing, owned and operated by Michigan State University, started out originally as a UHF station; and since 1959, has been sharing a commercial VHF channel. It offers credit courses and has served as a training laboratory. The station in western Michigan offers a varied program, including instruction by television for that area of the state. Mention should also be made of the activity at the University of Michigan, which, though it does not yet operate a station, has been actively providing programs of an informational nature for more than 60 other television stations, both commercial and educational.

Mention should also be made of various state plans and surveys looking toward interconnection of all these facilities in Michigan.

Wisconsin has three operating ETV stations, one at Madison, owned and operated by the University of Wisconsin, the other two at Milwaukee which are owned and operated by the Milwaukee Vocational Schools. The second station in Milwaukee, again, is a UHF station which was necessitated by the fact that the original VHF station could no longer accommodate all the institutions wishing programs. A state wide plan has recently been completed in Wisconsin looking toward the establishment of six additional channels in that state. Interconnection between the Madison and Milwaukee stations seems assured within the next six months.

The state of Illinois has three operating ETV stations: one in Chicago, one in Champaign-Urbana, and one in Carbondale. All three are VHF stations. The first is owned by a community, non-profit corporation; the second by the University of Illinois; and the third by the University of Southern Illinois. A state wide survey which would endeavor to formulate a plan to cover the entire state of Illinois by ETV is presently underway.

Indiana is the only state in this region, and one of the few in the eastern part of the United States, which does not have an operating ETV station. Application for an ETV station has recently been made by Indiana University and a construction permit has been granted. A very considerable amount of in-school ETV programming has been done cooperatively in the Evansville area by means of commercial channels.

Ohio has six operating ETV stations, has applied for two more such stations and has completed a state plan for an interconnected state network which would involve no fewer than 26 transmitters. A state ETV commission has been authorized and is actively attempting to implement this service. WOSU-TV in Columbus has pioneered the production of college courses. In cooperation with the Columbus and other public schools, WOSU-TV has done a great deal of useful in-school instructional work. The same could be said of WCET in Cincinnati, and, indeed, many other Ohio stations.

Oklahoma has two operating, interconnected ETV stations under the authority of the Oklahoma ETV Commission, in Norman and Tulsa. Another UHF-ETV station is operated by the school board in Oklahoma City. Plans for extension of ETV services in Oklahoma are now under active consideration.

The ETV stations in the six states of North Dakota, South Dakota, Nebraska, Minnesota, Iowa and Wisconsin have joined together to establish the Upper Midwest Educational Television Regional Network. The initial survey of feasibility was followed by a project on exchanging of programs. This in turn was followed by a joint production project. The stations concerned, under the leadership of Midwestern Educational Television, Inc., a non-profit corporation established for the purpose of operating the network, are now implementing a regular exchange service. The cost of this service will be supported by the member stations themselves. Portions of the network will be interconnected in the very near future in St. Paul, Duluth, Vermillion, Lincoln, and a number of other links. The complete interconnection is hoped for within the next two years.

The Great Plains Instructional Television Library serves this region as well. Another report will be made on its activity, but it should be noted that the use of the courses approved by that library has had a startling increase in the past year.

It will be noted that as of this date there are 27 ETV stations operating in this region of the United States and that many additional applications for construction permits, channel reservations, and applications for matching funds have been filed or are about to be filed.

It is also obvious that steady progress in terms of feasibility studies, programming studies, and engineering studies has been made. The legislatures of at least ten of these states have in one or more actions taken favorable action toward ETV and toward the establishment and/or operation of ETV facilities. The audiences of these stations appear to be growing in every area. The attitudes of administrators, while most difficult to assess, appear to become more encouraging. Important progress has been made and there is every reason to believe that it will continue.

I am going to take five minutes--no more--to discuss a few other things which have become important in this region.

One of these is a rather technical matter, but I mention it because it has been extremely difficult for both administrators and state government, and especially for the FCC to understand what we are about in some of these state network plans.

I recall the former Secretary of the Interior and the Senator from Nebraska, Senator Seaton, saying to me, "Why in the world are you locating a transmitter in that town? My God, man, there are two state senators from North Platte, and North Platte has a population of 25,000. Put the thing in North Platte." I explained to the senator that this is FCC reasoning which thinks in terms of a market. We are talking about coverage of an entire area, and that means that the transmitter does not necessarily bear any relationship whatsoever, in a production facility. Similarly, there is a new state plan which puts a transmitter in Roscoe, South Dakota, which is a hamlet of perhaps 175 people, instead of the third largest city in the state. Here again, it's a matter of coverage. The production will come from the universities and from the major school systems.

I mention this especially because I saw a criticism by FCC engineers, as reported in the trade press of the NAEB channel allocations report saying, "Yeah, well we could have put them out too, but they've got stations allocated in little places of less than a hundred people." It may well be that the location which happens to contain less than a hundred people is exactly the location where that transmitter should be placed in order to insure maximum coverage in terms of a state wide or a regional plan. This is an extremely important matter, and I think it ought to be brought forcibly to the attention of the state government on the one hand and to the FCC on another.

The second thing that I call to your attention is the leadership of the ETV stations in this area with respect to educational problems. Sometimes we're accused of being technicians or administrators, or worse. Yet, when one considers the Nebraska Council on Educational Television, which was a pioneering effort in bringing together a large number of separate school districts of greatly varying sizes, the record is impressive. The Council and the schools determined what their common educational goals were, and then determined in what way they might be aided by educational TV. The leadership on this sort of thing, of course, came from the station manager in Lincoln. Similarly, in councils constructed in South Dakota, Ohio and Minnesota, most of the leadership came out of the ETV station. I am reminded also of a station which is now doing the nursing training for nurses in five hospitals.

The very matter of state surveys themselves, generally speaking, to determine the feasibility, the practibility, of establishing an ETV network, have not come out of state departments of education nor, indeed, out of educational institutions. It has been the ETV stations themselves which have pioneered in this sort of work. I think it's time, however, that administrators, state departments of education, state boards of regents, and presidents of very large state educational complexes began to realize that it is time they also did some of this new planning.

Now, about this matter of the attitude of administrators and the change that should be made in it. I think I begin to see a way of convincing them--and I wish that this were on the merits of the case alone or on brilliant, pure logic. I think, however, that the convincing is being done in other ways. Through my peculiar experience--I was going to say privilege--in the last two years, I have talked personally and at some length with some 224 different state legislators in six different states. I have a pretty good idea now of the make-up of a state legislator in a midwestern state.

State legislators, generally, have a sneaking feeling in the back of their brains that in some way educational efficiency could be promoted by means of educational television. They aren't quite sure how this can work, they know that something ought to be done about it, and they are intent on pushing it. There is evidence in the sorts of things that have been recited: appropriations of $1,750,000 in Kentucky; $1,500,000 in Tennessee; $500,000 in Alabama; $600,000 in Nebraska. When you think of these sorts of appropriations in Pennsylvania, in Maine and in a number of other places, all of a sudden it begins to become apparent that somewhere the legislator, the small town legislator because these are all rural legislatures, have become convinced that ETV is an answer to part of his problems. I think this is good; I think it should be encouraged. I don't know what gave them this idea. I think that we ought to do our best to reinforce that idea. I think that it would be well for college administrators, university administrators, state boards of education, boards of regents to realize that this sort of thing is going on. I would also like to make some further remarks, but I will not, about the attitude of the business community, even the labor groups which are also convinced that ETV can do something, not only about the quality but about the cost of education.

Some attitudes must be changed. Some attitudes are about to be changed. I think that we might as well get ready to take advantage of those changes.

ETV DEVELOPMENTS IN THE UNITED STATES BY REGION

Western States

By
Ralph Steetle, Associate Dean and Director
Department of Educational Media, Oregon State System of Higher Education

Educational television, in all of its manifestations, continues to attract substantial attention in the western region. In some states the financial ability to construct facilities has led to early station development, and the initial favorable results have caused additional stations to be constructed and the power and coverage of existing ones to be increased. In other states, developments are more limited. A rough catagorizing of the western states would place in a list of active operations, rapidly increasing in service, the following: Washington, Oregon, California, Arizona, Utah, New Mexico and Colorado. In each of these states stations are on the air and consideration is being given to the expansion of service.

Areas of lower levels of development would include the more sparsely populated states of Nevada, Idaho, Montana, Wyoming, Alaska and Hawaii. But even in these states, some degree of planning is underway looking toward the time when conditions will permit ETV implementation.

The Western Interstate Commission for Higher Education continues an active interest in the development of educational television in the west. With the support of foundation and federal grants, conferences and consultations have been used to encourage cooperative uses of educational television to expand educational opportunities for western youth.

The visibility given to instructional television by such specialized meetings has stimulated continued consideration of ETV in the ongoing activites of WICHE.

The rugged country which separates the isolated population centers of Alaska has discouraged the use of the four VHF channels reserved for education in the nation's largest state. Interest in instruction by TV has been demonstrated by the University of Alaska and the Anchorage Community College through the provision of credit for courses telecast by commercial stations.

Arizona's ETV stations, KAET, Phoenix, operated by the Arizona State University, and KUAT, Tucson, licensed to the University of Arizona, together serve about 80% of the state's population. Currently, the University station at Tucson serves 2,000 campus students with courses and 30,000 elementary and secondary pupils with a school program.

California's Television Advisory Committee is charged with creation of a plan for the effective state-wide use of ETV and with coordinating authority over requests for federal ETV construction grants. Currently, requests for such funds have been filed by the San Jose Office of Education, the San Mateo Junior College and the Santa Barbara Educational Television Association. On the air are stations KQED, San Francisco, KVIE, Sacramento and KVCR, San Bernardino. The stations in San Francisco and Sacramento are interconnected, and they program classroom television for about 350,000 students. Stations are to be activated in Los Angeles, Eureka, Fresno, Redding, and other areas. Extensive closed circuit operations link schools in Anaheim, and in the near future, additional school populations will come within its coverage.

In Colorado, since 1956, Denver's KRMA has been providing service to schools and adults. A request is on file for a federal grant to expand station facilities. While no definite plan exists for coordinated development in the state, closed circuit at the University at Boulder, together with activation of Channel 12 and Channel 8 at Pueblo, are in the discussion stage.

No stations are on the air in Hawaii. A plan to develop a network of three VHF and six UHF stations serving 95% of the school children and 90% of the adult population awaits action by the next legislature, having failed to pass in 1963.

Idaho also failed to get legislative approval for the start of a three-station plan to serve 80% of the state's population. The University of Idaho operates a closed circuit system and is an applicant for a television station at Moscow.

Studies of Montana educational needs that could be met by the use of television led the Montana ETV Committee to recommend a network of educational television stations. At this writing, limited support has delayed next steps.

Limited use of closed circuit television can be found at the University of Nevada. No stations are on the air.

Utah is rapidly building television facilities through expansion of existing stations and the development of new ones. Pioneer KUED, Salt Lake City, seeks federal support for a system of 18 translators to extend its school and adult services. Two stations in Ogden, and broadcast facilities in Provo and Logan, indicate the extent of Utah developments. Planned expansion will increase the size of the school audience served from 60,000 to 100,000 a year from now.

Washington boasts five ETV stations, with additional ones planned for the future. Coverage of Seattle's KCTS is extended to many parts of the state by means of translators and community antenna systems. A State ETV Commission, appointed by the Governor and the State Superintendent of Public Instruction, serves to coordinate state-wide planning.

Albuquerque's KNME covers an area of eight thousand square miles, providing in-school programs for pupils at all grade levels. KNME plans expansion of its facilities, and the New Mexico State University plans a station at Hatch. Since 1960, New Mexico has had a state commission working to extend TV throughout the state.

In Wyoming some 6,000 school children take advantage of school programs from the neighboring Denver ETV station. Closed circuit television is used for observation purposes by the College of Education of the University of Wyoming. No state plans have evolved for the construction of stations.

In Oregon a two-station network connected to studios in three cities enables about 75% of the state's population to receive ETV services. The Educational Coordinating Council, representing the State Board of Higher Education and the State Board of Education, is actively working to extend coverage of the network beyond the populous Willamette Valley to other areas of the state. Extensive use of instructional television has been made by the State System of Higher Education since 1957. School program development and utilization is increasing rapidly under the stimulus of the State Department of Education. Extensive community antenna pick-ups place the service far beyond its present coverage limits. Applications are on file for the expansion of both stations.

CASE STUDY OF A TV TEACHER IN A SECONDARY SCHOOL

By
Wanda B. Mitchell
Evanston Township High School, Evanston, Illinois

I'm very much concerned, and have been concerned, with Dr. Conant's account of the education of the American teacher, and I have been educated recently by three things. I'm going to tell you how being a television teacher has changed me.

I think three influences in my life, since I started teaching, have caused me to make more changes in the way I teach than anything else. One of these is my superintendent, with whom I have been teaching in three difference states for 20 years. I say he has changed me, because he is always so far out ahead, so progressive, so challenging and such a slave driver that you have to keep up and make changes or you can't exist. A second thing that has changed me in the way I teach is team teaching. I do not think that any other concept in secondary education has changed the way I go about teaching more than knowing and participating in teach teaching. A third thing is television. Now while some of you were getting your education on the GI Bill, I was teaching in Schenectady, New York. This was during the War--World War II.

Ignorance "'tis bliss, 'tis folly to be wise." And in 1944, in a little speech magazine, I dared to write an article on television. Now I'm not stupid enough to read it to you now, but everything that I said there is true except what I said about make-up. And that is no longer true. Our high school in Schenectady in 1944--and I was a speech teacher--and our assemblies and our plays were used by the General Electric Company engineer who would try to feed them out over the air to the 50 receivers in Schenectady. They called the people up on the phone and told them to try to get it, and we provided the program. I sat in the studio and watched and absorbed, just as I am doing here in this meeting, and then wrote an article for other drama teachers on how you direct a play for television. I knew all about it then. I want to read only the last paragraph, last sentence only.

"However, no director or student of acting who expects to continue in that field after the war can afford to ignore this medium of expression which challenges us to utilize all the possible effects of stage, screen and radio. Let us be ready to make the most of this instrument for education and entertainment." At which point I dropped out of the television picture, because I was too busy just doing my daily teaching job.

When I came to Evanston, I was thrust back into it again; and since 1954, I have either been on camera as an on-camera teacher or, what I laughingly call a producer-director, which means getting everybody else to do the things for the classroom teacher who is receiving the program. What have I learned as a teacher because of this experience?

Like Janus in Ulysses, I am a part of all that I have met, and it's a little bit difficult to distinguish which of these things were done to me by television. I think I can separate them enough to make them clear for you.

The first one is what I have learned about teen-age boys and girls. Now I am not trying to tell you anything about elementary school or college level people. What I have learned about teen-age boys and girls, I could document and anecdote. But I'm going to keep within my time limit to prove a woman can do it, and I'm just going to tell them to you.

"Mother, I want to do it myself" is more than just a commercial for a headache remedy, it is the attitude of teen-age boys and girls. They do not want somebody lecturing at them, doing things to them, and sitting there passively gobbling it up. Secondly, in spite of everything I learned in education courses in college about attention, teen-agers can do two things at once. They can be writing and doing a thousand other things and looking through a blonde head to a screen and still see what's going on and learn from it. This is possible; I hate to admit this but they can do two things at once.

Thirdly, they draw very sharp distinctions between lessons and programs, and whenever the teacher tries to compete with commercial entertainment programs, most of the time you're second-rate. You'd better stick to your own area.

The fourth thing I've learned about teen-age boys and girls in my television experiences is that they are completely unpredictable.

Second main point, if you're outlining: What have I learned about other teachers? First, they are completely unpredictable. Secondly, I have to work with them in all kinds of situations, and I've learned they have very peculiar work habits. By peculiar, I mean queer, and by queer, I mean different from mine. They emphasize ideas in a peculiar way. Until I started working in television, I didn't know what other teachers did. I took education courses in college, and I made observations, but I didn't know then what I was seeing. Since then I have attended institute days and visited them in classes, but they're faked. I didn't know what really goes on in the classroom until television opened all the walls and I saw what went on other places.

In spite of the fact that these other teachers with whom I work are considering very unusual subject matter areas, because they're not mine, it's amazing how much they know and how much knowledge and skills the teachers of other subjects have. This is something I've learned because of television. I've also learned that every single one of them, and I've seen some very bad ones and some very good ones, can teach me something if I'm willing to learn.

What have I learned about lesson planning? That's point three. I use lesson planning just because I don't know any other word. It's what the teacher does all the time with kids and the stuff. Now you can figure out some other word for it.

We teachers waste much time repeating, riding our hobbies, and satisfying our own desires to perform. When I have to cut it down to 20 minutes, and take out all the things I just enjoy saying, it can get down to 20 minutes. The next thing--I don't teach all day on television. I have other classes with no television involved in any way. And most non-televised lessons would not stand up under the scrutiny with which evaluators examine the televised lessons. Another thing I've learned about lessons and planning them is that what students see may be as important as what they hear, including the room, the teacher, other students and visual aids. I worried myself into a lather trying to keep from having an unbusy background on television and having everybody's attention focused this way and that, and then walk into my regular classroom and pay no attention to this. It doesn't make sense.

Video taping with a playback is often followed by the burning, not of the books, but of the lesson plans. If no video tape recorder is available, minutes kept by a class secretary will have the same salutary effect. I wish I had time to tell you three or four descriptions of this that have jarred me. I have a class secretary, a student, who gets up the next day and reads what happened the day before, with the minutes corrected by the class. And their description of what I thought I was doing is jarring, and I've learned this about planning my lessons. That which flows from the mouth of a teacher is only a small segment of the teaching-learning cycle. And in our television lessons in our school most of it is a teacher-centered thing, I'm sorry to say. With all of the testing and arguments and research, it's still difficult to find out what you have really taught.

Next, what have I learned about the team? In every meeting I go to on utilization and anything connected with television, there's a studio teacher, there's a classroom teacher and the team must work together. In a public high school, the chief administrator is the captain of the team, and he holds the key to the locker room. Number 2: the janitor, or the custodian, is also part of the team, and he can't be fired. The engineer and the director must be soul mates or there will be 15 yards penalty for unnecessary roughness. Parents should not always have to sit on the side lines. If there are still departments that believe television can add nothing to their academic efficiency and excellence, remember that the best defense if a good offense. The production crews carry the ball and no play, however well conceived, will score if they don't know where they're trying to take the ball. There are many competent, imaginative, and dedicated educators who are not in the classroom, they are on the television production staff.

The fifth thing I've learned is what we still need to learn. The first one of these is: how can we be sure what we ought to communicate through television? Edward R. Murrow recently said, "It is easy to send a message out thousands of miles, but the success or failure of the effort depends upon the ability to move the messages or communication the last three feet that separate one man from another."

So I, as a teacher of boys and girls, am terribly concerned about that distance between the front of the TV receiver and the boy or girl. The second thing we still need to learn, at least I do, is: what should we be communicating? What is the message? Does the fact that Telstar and similar satellites can now take what I teach and send it all over the world alter this? Does this change what I teach?

The third thing: what can educators, who have television as their medium, do to eradicate the hatred of man toward his fellowman, violence, moral laxity, irresponsibility? As a classroom teacher, I could handle many of the situations content-wise with boys and girls if some medium, or something, or somebody, would handle these other things. As long as these questions remain unanswered, teachers who are concerned with the medium of television must continue to learn.

I'd like to join Robert Frost in a promise to continue the search for these answers. "The woods are lovely, dark and deep, but I have promises to keep. And there's miles to go before I sleep. And miles to go before I sleep."

CASE STUDY OF A TEACHER ON THE COLLEGE LEVEL

By
David W. Bergstrom, Professor, Zoology & Physiology
Miami University, Oxford, Ohio

In 1955, Miami University, Oxford, Ohio, received an initial grant of $135,000 from the Fund for the Advancement of Education, followed by another grant of $150,000, to be utilized over a period of four years. This money was to be used for the purpose of studying the effectiveness of certain types of large group instruction, and to demonstrate the feasibility of these procedures at the college level. The study included a consideration of courses taught through television.

Since this is a case study, I should probably mention all facets of my relationship to the study; however, time will not permit this. Nevertheless, I will mention, candidly, as many as possible and allow you to make what you wish of them.

How did I land on TV? Walking down a hallway after a meeting, the Dean of Educational Services simply asked if I would be willing to give it a try. Said he, I was an "effective teacher," a "popular instructor," and "the subject ought to lend itself well to TV," a sure way to sell someone on the idea. Only an interested and adventuresome spirit caused me to say that I would give it a try. My department concurred. I had no real idea of what I was getting into.

I have stated many times, in many places, that not every teacher should go on TV. An animal shifting from its normal woodland environment to the grassland can survive successfully only if it can adapt to the new environmental factors. Not many can do this. So it is with teachers in a new environment. I moved into the new environment with only a few hours of advance planning and orientation to the medium. The first month was horrible beyond description, both personally and academically. But slowly, some adaptive features within me and within the other specimens of my new environment, began to emerge. Life became smoother, and functioning began to have a feeling of normalcy. I felt I could survive, and the new environment became interesting and challenging. I have watched others fail in ITV, primarily for lack of adaptive qualities. Somebody pointed the finger at the wrong person. Identification, selection and training remain a problem. It should also be said, that, even though I remain on the medium for another decade, I probably will never be as truly happy or satisfied as in the conventional situation, for there are some features of the TV environment that cause me to adapt only with both mental and physical discomfort of some magnitude. Moreover, I am deeply conditioned to the conventional.

Why was my department almost eager for me to go on TV? The answer is simple. By departmental standards, I could do the job of five or six men. They could be freed to expand the curriculum while enjoying a reduction in contact hours. This was practical! Over conventional methods, it is estimated by the Dean of the College of Arts & Sciences, I have saved the University approximately $31,000 per year in manpower costs, to say nothing of the fact that it may have been nearly impossible to hire appropriate top-notch staff during successive growth years to handle the increasing numbers of students.

Am I satisfied with the academic results via TV? Let me state that for three years I had classes being evaluated by professional evaluators against so-called control classes. In fact, evaluation of effectiveness was done student by student. Numerous criteria and evaluative devices were utilized. I could bore you with numerous impressive statistics, however, they all add up to what you probably expect. I am a charter member of the cult of "no significant difference." I refer you to the Final Report of the Experimental Studies in Instructional Procedures, Miami University, Oxford, Ohio, 1960.

Actually, I personally have paid little attention to the findings of the professional evaluators. As a practitioner in higher education with reasonable experience, I have certain standards and aims with regard to what I expect of the students. If I saw that I was getting appropriate results by televised instruction, I felt I could be satisfied with the use of the medium. I must admit, however, that I have remained continually disturbed over the fact that I am unable to get better results through the use of this grand audio-visual device called ITV. I keep harboring the hunch that we (including the students) still don't really know how to use it. And where are the students when they take the course? Any place where there is an appropriate TV receiver. Leave 'em alone where they want to be and we get better results.

I will anticipate a question concerning my relationship with the crews, from engineers through floor men. In general, our relationships have been most cordial and delightful. Perhaps this has been because they have been more tolerant of me than I sometimes have been of them. Too, they have graciously accepted my oft-times blunt suggestions and criticisms. In general, I have felt that I am the only one allowed to make errors--I expect peak performance from them, and I've gotten it. Students will accept a "normal" boo-boo by the professor, but a technical error will cause them to be critical and/or laugh. They are, after all, conditioned to commercial TV. Also, I have emphatically made it known to the TV personnel from year to year that I expect the student to be able to see, and hear, whatever is being shown and said, preferably better than in the conventional situation. I have suggested to the director and cameramen that it might be wise to have two words constantly flashing through their cerebrum: think, and tight. Once or twice I've been called a prima donna, but the results on the screen have been generally up to my, and their, expectations, and we have had a right to be personally proud of the results.

After six years, and nearly 600 hours, on camera (many more if one were to count the video tape showings), can I see any compensations? Materially? Not too much, although a few extra dollars have probably been received for being a good boy on TV. A 50% reduction in teaching load has been looked upon by some of my colleagues as a form of compensation, but not by me. The rigors of ITV preparation, teaching, and general management are still little understood or appreciated by most collegiate personnel, either academic or administrative. Every dean, academic vice president, and president ought to be required to give a full year credit course on TV. Only then will they really understand. A form of compensation, not often thought of as such, the single most important device in the studio, comes via the video tape machine. Time is made available during the typical academic day to do desirable things other than repeated identical classroom performances. Of course, there has also been the intangible compensation of a good feeling that comes in a pioneering situation.

But after these several years of TV experience, I found myself harboring the feeling of being caught in a grind. Moreover, I found myself becoming complacent and unexcited in the job. It became tougher and tougher to work at changing the old run-down sheets, in spite of the fact that I was seldom satisfied with a tape or show. I, therefore, decided to take at least a year off--this year, '63-'64. At this point of the academic year, I am completely uncertain as to whether I shall return to the medium. If pressed in a later discussion period, I may choose to reveal reasons for a growing personal disenchantment with ITV. Preparations, the ground work, are being made by our Director of Broadcasting to have me tape a 90-hour Biology course, not only for local use, but also for distribution. At the moment, I am less than enthusiastic, at least with regard to the distribution. I am in favor of LOCAL PRODUCTION by LOCAL STAFF of ITV offerings. This is when success and happiness comes, along with acceptance of the medium as a mode of instruction.

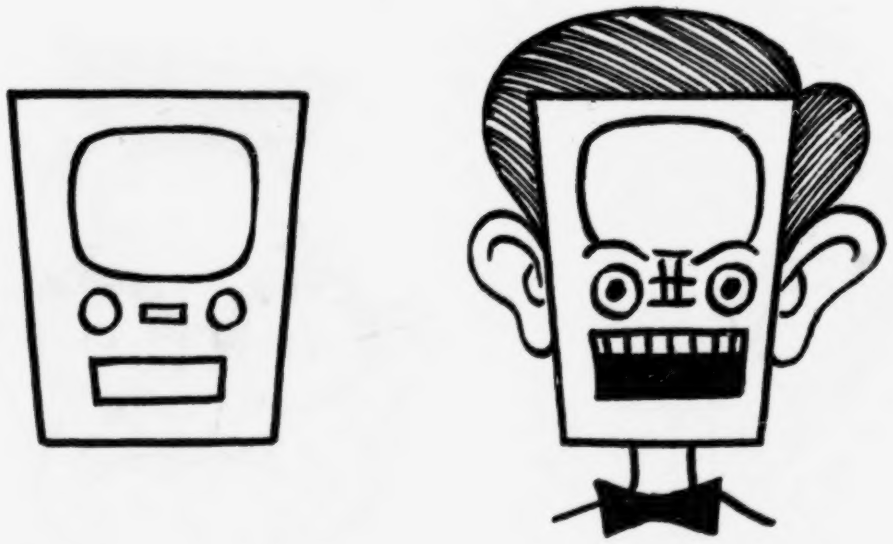
At the present time, I can only suggest that I cherish my years of experience on TV. Unless something occurs to alter their present opinion, the academic administrators of my institution, particularly as expressed by the Arts & Science Dean, and the Dean of Academic Centers, are inclined to promote ITV among the various departments, and predict that its use will be substantially greater in the future.

TRAINING TEACHERS IN THE NEW MEDIA

By
Herbert V. Hake, Director of Radio and Television
State College of Iowa, Cedar Falls, Iowa

At the last count, there were 1,209 colleges and universities approved for teacher education in this country.[1] Since this count was made in 1955, I am sure that several more colleges have been added to meet the ever-increasing need for teachers. In too many of them, the television receiver--one of the most significant teaching tools ever invented--is still regarded as an "idiot box."

Some of my colleagues refuse to have a TV set in their homes. They consider it to be a menace to their reading, to conversation and to the amenities of family life. Several professors I know are convinced that the person who sees any good in television has a hole in his head. Several others who have finally yielded to family pressure by purchasing a set justify their apostasy by declaring that they must, after all, keep "an open mind" on the subject.



There is a curious paradox about this attitude toward television. In early December, the Board of Education of one of our large school systems in

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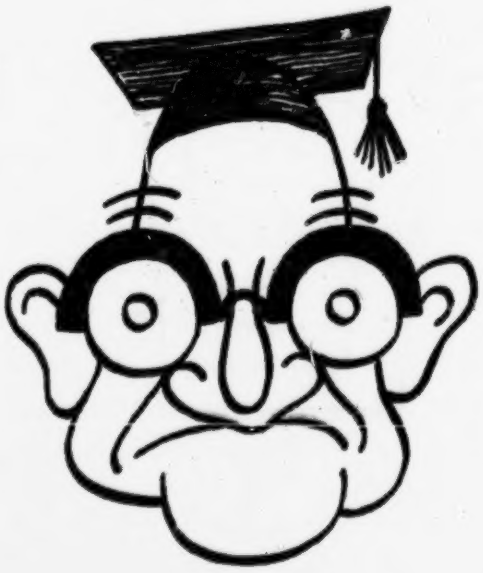
[1] Meek, Elizabeth Anne, "The TV Teacher," Teacher Education: the Decade Ahead, DeKalb Conference Report, National Education Association, Washington, D. C. 1955.

Iowa commended the TV industry for its "educational service" in reporting the full ramifications of our recent national tragedy and for giving the background and the qualifications of our new President. Yet this is the same school system which stands alone in refusing to participate in the educational service afforded by a TV Schooltime series that is being used by the schools in over one-half of the state.

Dr. DeAlton Partridge[2] has said that "when any system of communication becomes available to a large proportion of the population, it becomes a potential force in education. In the past, this has happened with the spoken word, the written word, printing, motion pictures and radio. It is happening with television. If television is to play an important part in the education of the future; and if, as many believe, the role of the teacher is to be altered by this electronic device; then colleges and universities that prepare teachers must be concerned about it."

What has been the record of our teacher training institutions in the use of mass media? In general, we haven't achieved monumental success with radio. When I was a freshman in a little college in Missouri, I was enthralled by my homemade crystal set and the clarity with which I could hear Station KSD in St. Louis. But it was a marvel which made little impression upon my professors. Even after radio achieved the technical refinement of the superheterodyne receiver, its use as a teaching tool was largely neglected. There were a few hardy souls like Dr. Walter Damrosch who recognized the possibilities of mass instruction, but our professional educators, for the most part, maintained business as usual and ignored radio as a teaching tool.



How many colleges and universities do you know, right now, with a course for the training of teachers in the use of radio? I am not talking about professional courses for radio announcers, writers, producers, engineers and station managers. I am talking about courses designed specifically to show teachers how radio can be used as a medium for educational enrichment.

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[2] Partridge, DeAlton, Introduction, Television in Teacher Education. The American Association of Colleges for Teacher Education, Washington, D.C., 1960.

The average teacher in our schools today equates educational programming with insufferably dull papers delivered in a dreary monotone, paralyzing panel discussions, and counterfeit classroom demonstrations. It is no wonder that the words "educational radio" have acquired a stigma which many stations avoid like the plague. If the teacher training colleges in this country show as little interest in television as they have shown in radio, they ought to have their heads examined.

Quoting DeAlton Partridge[3] again: "To judge educational television primarily in terms of alleviating the teacher shortage or of enlarging classes is not valid." The valid question is: "Can TV bring better education; can it help children to learn more, to become more creative, to think better, to become better persons?" All of us here today believe that television can do all of these things. It certainly is not doing all of them now, but the failure is not due to the medium. It is due to the lack of imagination in the use of the medium.

And where does the responsibility for cultivating this imagination rest? It rests--at least in part--upon those who train our teachers. Why, then, isn't the job being done, except in a few isolated cases? There are two main excuses:

(1) "Our teaching candidates don't have the time to take courses in television." As academic requirements now stand, this is undoubtedly true. Let me give you an example of the courses required of a candidate for the degree of Bachelor of Arts who expects to receive a certificate to teach. This list is taken from the catalog of a teachers college which will remain anonymous:

> Courses in General Education -- 43 semester hours. (These are courses such as "Man and Materials," "Exploring Music," "Heritage of the Bible," "World Resources," and so on.)
>
> Next there are the courses in the Common Professional Sequence, which total 22 semester hours. These include "The Teacher and the Child," "Psychology of Learning," "Social Foundations of Education" and Student Teaching.

We now have a total of 65 semester hours, exactly one-half of the 130 semester hours required for graduation. All major, minor and elective courses (if any) must be crowded into the remaining 65 semester hours.

It occurs to me that a few of the sacred cows might be removed from the academic pasture in order to make room for the breed of animal that provides a higher grade of milk. This is the kind of cow I should like to recommend for every teachers college herd:

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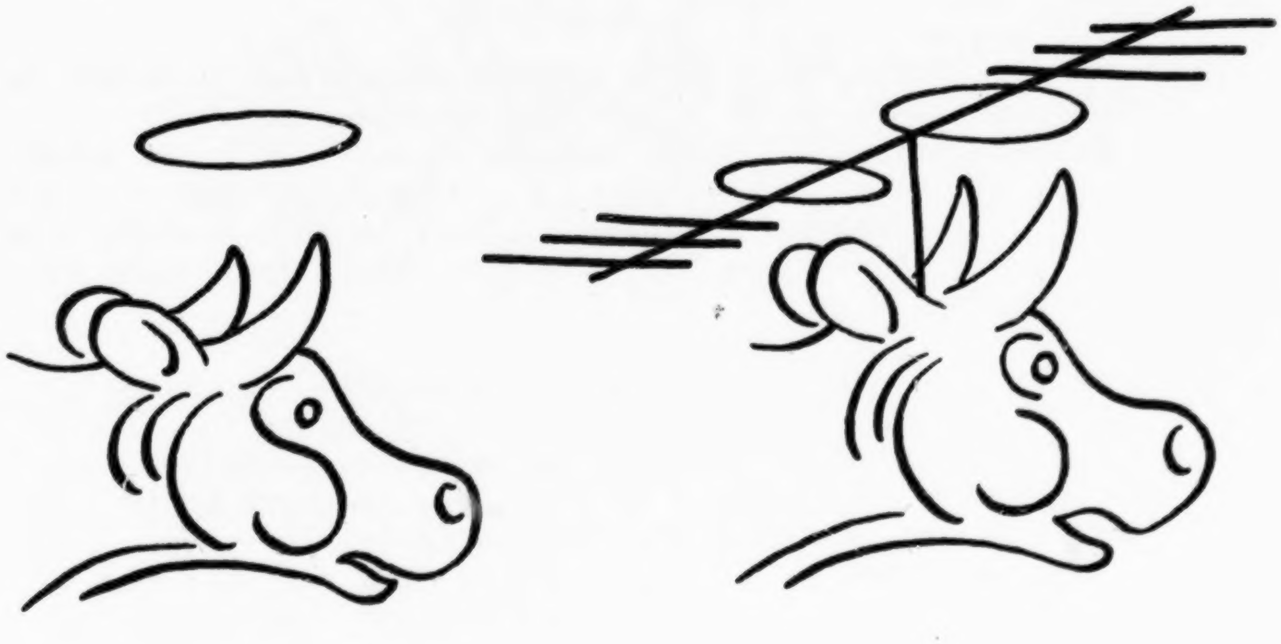
[3] _Ibid_.



There is a second reason why this hybrid is not permitted to enter our Halls of Ivy:

(2) "The college has no TV station of its own, so there is no laboratory for courses in television."

It is not necessary to have an on-the-air TV facility in order to teach courses in television. Closed circuit TV equipment with vidicon cameras will serve the needs of a laboratory, and this type of equipment is within the financial means of most teacher training colleges. Moreover, commercial TV stations welcome public service programs that have visual excitement and community appeal. They are understandably reluctant to give valuable air-time to the run-of-the-mill "educational" program in which there is neither communication nor conviction. But there is no lack of outlets for programs which have carefully prepared video values.

I find it difficult to join in the chorus of condemnation of commercial TV stations. Everyone surely recognizes the fact that in our American system of free enterprise it is necessary for the commercial station to sell advertising in order to meet its tremendous expense of operation and to make a reasonable profit. And yet, in a time of national crisis such as we experienced a few months ago, every commercial station in the United States instinctively sacrificed its advertising revenues for three and one-half days in the public interest. The dignified documentary which commercial television brought us should be remembered when next we are disposed to "decry the little box as an invention of the devil and the opiate of the masses."[4]

For even when commercial television is doing business as usual, it is not as bad as its critics paint it. This is the popular conception of the manager of a commercial station:

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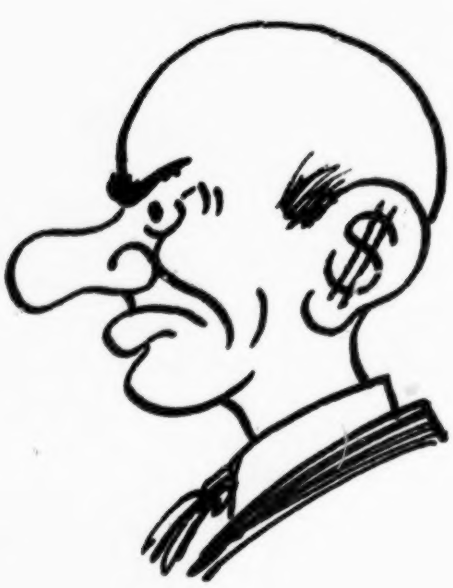
[4] Pack, Harvey, "TV Keynotes," Waterloo Daily Courier, Waterloo, Iowa, December 3, 1963.



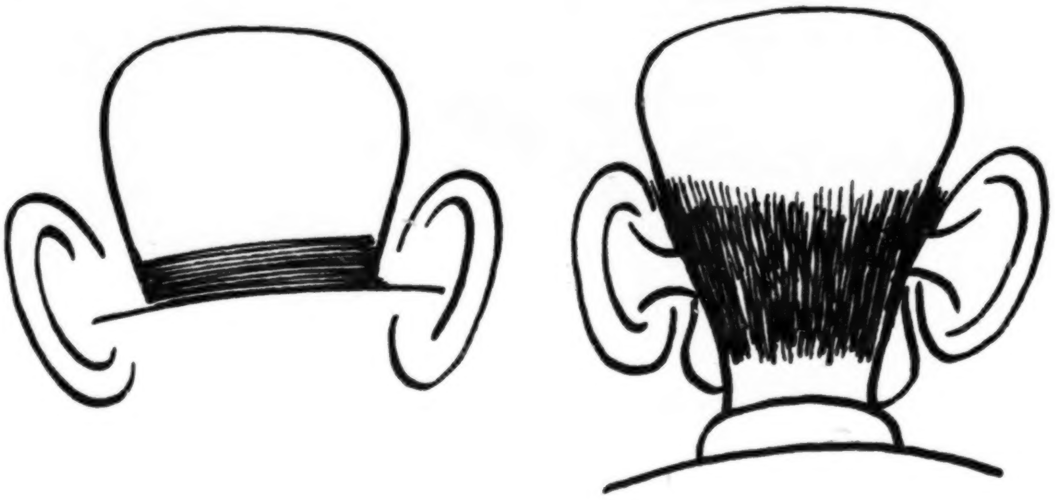
He is regarded as a "Cash Ear"--a man who listens only to the sound of money and who is indifferent to the "public interest, convenience and necessity." If you will stop for a moment and recall the many public services performed by your local commercial stations, you will recognize the unfairness of this view. Moreover, most of the significant educational work that has been done in this country has been done by the despised commercial stations.

Dick Hull, who is probably the most widely-known pioneer in educational television in the world, blazed the trail when he put WOI-TV on the air nearly 14 years ago, on February 21, 1950. Although the station was owned by Iowa State University, it was (and continues to be) a commercial station. Since it received no financial support from the State of Iowa, it was obliged to pay its way from the outset. Despite these fiscal pressures, however, it has allocated large segments of its time through all these years to educational programming, in which the State College of Iowa has been privileged to share.

At the moment, three other commercial television stations in Iowa are carrying the Schooltime programs produced by the State College and the two State Universities. The stations have made time available at bargain rates, and the county boards of education have assessed the participating schools nominal per-pupil fees in order to meet the expense of broadcasting. Kinescope recordings of the programs originally produced for WOI-TV are furnished as a public service.

All of this convinces me, at least, that a teacher training college can find an effective outlet through a commercial TV station and that its work in the medium of television need not be handicapped by its lack of a TV station.

I believe that it is high time for us to stop making excuses and to leave the horse and buggy age. Too many teachers of teachers are still looking backward to the comfortable days when life moved along at the leisurely rate of four miles an hour. Methods of transportation and communication have changed in the past fifty years, and we need to catch up.



If our future teachers are to make use of the marvelous medium of communication which we call television, it is incumbent upon us to give them some guidance in adapting their teaching to it. For it will involve different methods of teaching than we learned when we were in college.

In 1962, the Subcommittee on Instructional Media of the American Association of Colleges for Teacher Education published an *Outline of a Television Course for Teachers*. I had the privilege of serving as a member of a subcommittee of that Subcommittee. To my knowledge, the course which we outlined is being used by only one school--Southern Connecticut State College in New Haven, Connecticut.

It may tax our ingenuity to build the kind of courses that will have practical value for our future teachers, but whether it requires special orientation courses for us, or a team-teaching effort, or the investment of a sizeable sum of money for laboratory facilities, or a combination of all three, it is an obligation to our students which we must meet.

Edwin P. Adkins, formerly Director of Education at the State University College of Education in Albany, New York, and National Coordinator of *Continental Classroom*, has pointed out that "television is not the panacea for all of the problems of education. It is doubtful that it will significantly alleviate the teacher shortage, the lack of dormitories or classrooms, or the dearth of instructional materials. . . . Television cannot replace the classroom teacher, but it may help him do a better job."[5]

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[5] Adkins, Edwin P., "Implications of Continental Classroom for Education," Chapter 7, *Television in Teacher Education*, The American Association of Colleges for Teacher Education, Washington, D. C., 1960.

On the strength of this possibility, I earnestly hope that the 1,209 colleges and universities approved for teacher education in this country will face the future instead of the past.

EDUCATIONAL TELEVISION TECHNOLOGY--BROADCAST AND OTHER DISTRIBUTION SYSTEMS

By

Oscar Reed, Jr., Head, Jansky & Bailey Broadcast-Television Division
Atlantic Research Corporation, Washington, D. C.

In its Golden Anniversary issue in May, 1962, the Proceedings of the Institute of Radio Engineers carried a Section entitled, "The Future--Communications and Electronics--2012 A.D." Approximately 60 outstanding radio engineers and scientists endeavored to project themselves 50 years into the future and write a paper on the developments of the "past" 50 years. Many of these papers center in communications, man-machine coupling, and the field of education. "Education in 2012 for Communications and Electronics," by Terman, "Engineering Education--Circa 2012 A.D.," by Everitt, "A Day in the Life of a Student in the Year 2012 A.D.," by Ponte, and "Fifty Years of Teaching Machines," by Zahl, are but a few. To set our technology in perspective, these papers would suggest that were educators to make appropriate use of all the following elements, they might begin to approach the dreams reached for in this 50th anniversary issue.

ETV broadcast stations (UHF-VHF), ETV networks, microwave systems, CCTV systems and CATV systems, airborne, satellite transmissions, the 2500 Megacycle Instructional Television Fixed Service, and LASER transmissions might all contribute in varying degrees to bringing about the day suggested by two additional authors in this same issue. Simon Ramo[1] points out that we are all aware of the enormous impact of science and technology in shaping our future lives usually illustrated by H-bomb and space achievement references. In the long run, however, he postulates an area of technological endeavor of even greater significance. He says it is, the extending of man's intellect, the source itself, of all future scientific and social progress. He views the extension of human intellect by electronics--which he calls "Intellectronics"--into every aspect of running our businesses, our educational systems, our government, wherever intellectual processes are involved. The most truly intellectual activity of all, he visualizes as the education of the human brain. An "Intellectronics" system could, he believes, make a hundredfold change in educational effectiveness.

- Routine material can be machine presented, leaving the more difficult concepts for the higher intellects of the human educator.

- Programmed machines can stimulate thinking of the student.

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[1] Ramo, Simon, "Extending Man's Intellect by Electronics," Proceedings of the IRE, pp. 640-643, May, 1962.

- The electronic "presenter" can speed up or slow down, add more explanations, skip steps, as it makes the presentation--automatically--as the result of continually noting the students' pushbutton response to questions.

- An intellectronic system can remember the progress of millions of students. It can compare their tested learning with the estimate, with the plan.

- It can measure and report deviations.

- It can recognize an individual student and give him an accelerated or special presentation or test, all by a virtually instantaneous scan of his record and a following of rules that have been set in by the wiser human educator.

John R. Pierce[2] in four succinct paragraphs relates travel to waste and points to communication as an alternative to travel. Surely, he says, one need not move human bodies in order to achieve a meeting of minds. The broadband circuits of the future can provide face-to-face, or group-to-group sound and vision, packaged to preclude eavesdropping. He points out that when communication is cheap, enough students can attend classes by television and, surely we see this in existence in considerable degree today. Dr. Pierce concludes that one would not care to visit his wife by television, but the clear answer here is that the man could stay home and communicate to work! Now that this has all been foreseen, and surely many of you here have had a clear hand in inspiring some of this dreaming by your own pioneering efforts, where do we find ourselves at the threshold of 1964 with respect to this wide array of technological tools? Before parting with these first references, however, and lest they seem a little routine to you, let me refer you for further stimulation to the paper by Harold A.Zahl[3] relating to the last theoretical piece of work, the Unified Computer Field Theory which was first proposed by ILLIAC IV (a computer) at the University of Illinois in 1996. This led to the well-known Nobel prize committee decision eliminating all future machine contributions from competition with humans.

BROADCASTING (UHF--VHF)

Television stations operate on VHF and UHF frequencies and are assigned three bands of frequencies which are divided into six Mc channels. The frequency ranges are 54-88 Mc (except 72-76 Mc), 174-216 Mc, both VHF ranges and 470-890 Mc in the UHF range. A total of 646 stations is now operating of which 531 utilize VHF channels and 115 occupy UHF channels. This number includes 83 noncommercial educational stations of which 29 operate in the UHF portion of the range. There are 23 educational construction permits outstanding, four of which are for VHF and 19 for UHF facilities. Availability of channels is determined by a Table of Assignments contained in the Rules of the Federal Communications Commission listing the various cities and towns. The table lists approximately 2200 channels of which about 350 are presently reserved for noncommercial educational television use.

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[2] Pierce, J. R., "Communication as an Alternative to Travel," Proceedings of the IRE, p. 643, May, 1962.

[3] Zahl, Harold A. "Fifty Years of Teaching Machines," Proceedings of the IRE, pp. 575-578, May, 1962.

There are about 117 construction permits outstanding which represent uncompleted construction or stations which have been on and gone off the air reverting to construction permit (CP) status for economic problem reasons. Many of the latter represent UHF facilities whose coverage has not measured up to that available to VHF facilities, which in many cases are assigned in the same market area. Thus with only 12 channels available for assignment in the VHF portion of the spectrum and 70 channels, many of which are unused in the UHF region, the Commission has been faced for some years with an allocation problem by reason of coverage and other technical inequities.[4]

In January, 1960, a new Notice of Proposed Rule-Making was issued by the Federal Communications Commission identified as Docket No. 13340. The Commission therein invited comment on its proposal to:

1) Consider applications for waivers of minimum television station separation in exceptional, individual cases meeting certain criteria; and

2) Adopt revised rules and standards governing calculations of the service areas of television broadcast stations.

A new Table of Assignments issued by the Federal Communications Commission in late October, 1963, in a further Notice in Docket No. 14229 proposes a total of 2,634 VHF and UHF assignments of which 703 would be proposed to be reserved for educational use. In a report entitled, "UHF Television Channel Assignment Plan,"[5] NAEB has submitted a study using digital computer methods which suggests a table having 3,214 total assignments of which about 1,000 would be reserved for educational use.[6] In selecting the 1,596 communities for which channel studies were made by computer means, leaving untouched existing stations and issued construction permits, the 1961-1962 national survey undertaken by NAEB was used extensively as a guide.[7] This compilation indicated a projected ten-year need for 1,197 channels. The nationwide uses of educational stations of all classes and types in use at present are listed alphabetically by state and city in the document prepared by Gertrude G. Broderick.[8]

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[4] Reed, Oscar, Jr., "Broadcasting Developments Now Taking Place," Proceedings of the IRE, pp. 837-847, May, 1962.

[5] UHF Television Channel Assignment Plan, Report of NAEB Study to Develop UHF Assignment Plan Using Digital Computer Methods, Pursuant to Contract, Office of Education, U. S. Department of Health, Education, and Welfare, N.D.E.A.--OE-2-16-027.

[6] "NAEB Has Its Own Table," Broadcasting Magazine, pp. 66-67, November 11, 1963.

[7] The Needs of Education for Television Channel Allocations, Survey by National Association of Educational Broadcasters, Pursuant to Contract, Office of Education, U. S. Department of Health, Education, and Welfare, N.D.E.A.--S.A.E. 9273, 1962.

[8] Broderick, Gertrude G., Educational AM and FM Radio, and Educational Television Stations, By State and City, Educational Media Specialist, U. S. Government Printing Office, April, 1963.

The average service ranges which television broadcast stations can deliver have been studied and were reported in the findings of the Television Allocations Study Organization to the Federal Communications Commission in 1959.[9] While receivers have improved to some extent in the meantime, the advent of the all-channel receiver as standard in 1964 may bring some further upgrading. The "critical distance" factor of range will be with us for some time however. This is especially true where terrain or man-made propagation path roughness is considerable.

Frequency Range	Channel Range	Critical Distance-Miles
Low VHF	2- 6	65
High VHF	7-13	55
Low UHF	14-40	40
Medium High UHF	41-83	30

In no case does service cease suddenly as the "critical distance" is exceeded. Rather, at about this distance, the proportion of viewers receiving really satisfactory pictures begins to decrease rather rapidly, while those receiving poorer pictures increases correspondingly. Better than average receiving antenna installations, especially for school installations, may be expected to improve these average ranges also. Thus, reasonably wide-area coverage, usually about a major population hub, with service to a large general viewing audience as well as school viewers, may be expected to be provided by this type of facility.

Satellite and booster stations, which may operate simply by rebroadcasting the program material of the main station, may also be used. Thus, the range of one broadcast outlet may be reinforced or made available in an additional area.

The number of channels needed for the educational service is directly related to these broadcast service ranges and supplemental station possibilities. Thus, we see that Alabama has 16 channels reserved for educational use in the present FCC Table of Assignments. Florida has 22 channels so reserved.[10] These states, as a result of specific requests and far reaching planning, are in the vanguard and it is surely not hard to envision the ETV channel growth needs prophesied in the NAEB studies.

ETV NETWORKS

As educational television stations come into operation in any given region, it is natural and efficient that there should be course and program material interchange between them. The Federal Communications Commission provides for this by allowing educational stations to interconnect with microwave relay facilities between station locations utilizing several of the microwave frequency bands in the 2,000, 6,000, and 13,000 megacycle portions of the spectrum. On frequencies several times higher than the highest UHF channel, 884 to 890 megacycles, wavelengths are even shorter and can be beamed several tens of miles with "dish" antennas having high gain and pencil beam-like directivity. Thus, to some extent, frequencies in these bands can be used in multiples for receiving and retransmitting in several path "hops" if need be to reach over longer distances.

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[9] Engineering Aspects of Television Allocations, Report of TASO to Federal Communications Commission, pp. 1-721, March 16, 1959.

[10] "Rules and Regulations," Part 3, Subpart E, Television Broadcast Stations, Federal Communications Commission, Vol. III, September, 1961, and amendments.

While such bands have been used in some states such as Alabama, California, Florida, Ohio, Oklahoma, Oregon, Texas, and Washington for such interconnection of several stations, newer standards and wider bandwidths need to be provided by the Federal Communications Commission for additional and longer system usage. The equipment commonly employed, to date, has been that developed for one-hop interconnection of studio facilities in a city to a remotely located single transmitter location. Longer haul, wider bandwidth, heterodyne equipment capable of multihop use can now be provided which will make intrastate and interstate networks practical should one state or several states desire to build their own systems.

Alternatively, common-carrier systems of AT&T, Bell, or private telephone companies can be leased to provide such interconnection for a monthly fee. The Bell system provides thousands of miles of intercity television channels. While some channels are used for educational systems and others are occasionally used for closed circuit applications, most of the channel usage, at present, is by commercial network broadcasters.[11] At the start of 1963, there were 94,000 miles of video intercity channels on about 27,000 miles of intercity routes. Over 98% of the channel mileage is on microwave radio systems providing at least four-megacycle bandwidth. By contrast, in 1954 30% of the intercity 69,000 channel-miles was coaxial cable interconnection limited to 2.7 megacycle video bandwidth.

AT&T equipment operates in the 4,000 megacycle band with the backbone of its system being 0.5 watt, Type TD-2 equipment. For 1965, 5-watt, TD-3 equipment is projected. Educators, particularly those associated with colleges and state departments of government, have become very gregarious in their requirements. Frequently, they want video (television) information exchange, an audio channel for TV audio, and FM audio channel, an order or service audio channel, perhaps a teletype channel, and then even occasionally some data channels thrown in for inter-university or computer center use. Where cost and operating expense comparisons may lie, between common-carrier leased rates (if the Federal Communications Commission has a regulation to cover the case) and a privately owned and operated system, may take several consultants to figure out. This necessitates a "systems" study.

All in all, educational television networking has made considerable progress since its feasibility was intensively examined at a conference in 1959.[12] More progress at a higher rate of implementation may be expected in the near future.

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[11] Jenkins, S. C., "Intercity Television Network Service Today," AT&T Co., Long Lines Dept., NAB Engineering Conference, Chicago, Ill., April, 1963.

[12] "The Feasibility and Role of State and Regional Networks in Educational Broad-Casting," Proceedings prepared, published by National Association of Educational Broadcasters, pursuant contract Office of Education, U.S. Department of Health, Education, and Welfare, National Education Association Building, Washington, D.C., September, 1959.

In addition to the states previously mentioned, there is a Maine-New Hampshire-Boston network functioning, and the educational television stations in Boston and New York City have been interconnected using common-carrier facilities. Kentucky, New Hampshire, and Nebraska are currently in the process of final designs to implement state-wide networks authorized by their respective state legislatures.

MICROWAVE SYSTEMS

Part 4, Subpart F of the Rules of the Federal Communications Commission[13] deals with television pickup, television studio to transmitter link, and television intercity relay matters. All these auxiliary services may be thought of as necessary to do one of the following:

1. Transmit a TV program from a point remotely located from the TV studio to the TV station (as from a fire or football game). A "land mobile station" is the classification accorded by the Federal Communications Commission.

2. Transmit a TV program from a studio to the transmitter site. This is known in abbreviated terms as an STL station (studio-transmitter link).

3. Transmit TV programs intercity from one station to another (an intercity link).

In each of these cases related communications may also be included meaning accompanying audio and order or service voice channels can be put on the same "carrier" as the picture information or carried separately. Frequencies in three bands are available for these uses.

Band A - 10 channels, 16-17 Mc/s wide, between 1,990 and 2,500 Mc/s (not continuous).

Band B - 10 channels, 25 Mc/s wide, between 6,875 and 7,125 Mc/s (continuous). Top three reserved for common-carrier use.

Band C - Band C was deleted--Band D is still called "D".

Band D - 22 channels, 25 Mc/s wide, between 12,700 and 13,250 Mc/s (continuous).

Certain frequencies in the bands 17,700 - 19,300 Mc/s, 19,400 - 19,700 Mc/s, 27,525 - 31,300 Mc/s, and 38,600 - 40,000 Mc/s are also available for assignment on a case-to-case basis for the three classes of service although equipment is not generally available as yet and bandwidth and frequency tolerance are to be specified in individual authorizations. Sharing with other services is necessary on some of the frequencies involved and the non-interference provisions of the Rules may be invoked by the Commission if occasion demands.

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[13] "Rules and Regulations," Part 4, Experimental, Auxiliary, and Special Broadcast Services, Subpart F, Federal Communications Commission, Vol. III, September, 1961, and amendments.

Rule-making was requested of the Federal Communications Commission to provide for the transmission of closed circuit television course material over such channels. This would provide for an extension of service between schools and colleges which might not have broadcast facilities yet might desire to contribute to a state or regional network activity involving both open and closed circuit types of operation. At the present time, there is no clear-cut provision for ETV microwave. If the ETV user is a broadcaster, he may operate on microwave frequency channels available to any broadcaster under the Rules governing studio-to-transmitter links and intercity relay. If he is not a broadcaster, he may apply for different channels provided under the Business Service Rules of Part II governing the Industrial Services. Educational groups are eligible under these rules, and some special provisions are made for closed circuit TV operation at 6,000 megacycles by educators. It is significant that those operating under these Rules cannot use their facilities for transmission of material that is to be broadcast.

At Ohio State from 1957 through 1961, instructional television enrollment for WOSU-TV increased from 574 to 59,080 students (see Reference 7, pp. 26-27). More recently, a branch of Ohio State located in Dayton has been taking 26 hours per week by microwave common-carrier interconnection from the main campus at Columbus. The opportunities and needs to bring the classroom to the student rather than the continuation of the classical pattern can be facilitated by "talk-back" arrangements through several technological advances.[14]

Microwave techniques may, therefore, be viewed as affording the opportunity under certain conditions to extend broadcast station or closed circuit courses into a larger combined zoning or state-wide pattern as occasion might demand. Similarly, as state departments of government are eligible under microwave Rules to service certain functions of their operations, common interest with educators may be found in joint development of microwave interconnection patterns and usage looking toward either private or common-carrier means.[15] Standards remain to be fully developed and defined in this whole area involving television and service transmissions of all types. NAEB, in a study soon to be released under the auspices of the U. S. Office of Education, is again in the forefront with a pilot study.[16]

CCTV SYSTEMS--CATV SYSTEMS

Closed circuit television systems and community antenna television systems share a common technical feature in that picture and sound signals are conveyed by wire transmission lines or coaxial cable to the viewers' television set. For the former system generally no space propagation paths at all are concerned. In the latter mode, master receiving antennas focused on a distant broadcast transmitter are used to render very weak signals, generally inadequate for mass direct reception, usable for a large number of receivers which may be connected through signal amplifiers to the master receiving antenna system. The latter systems have become important adjuncts to educational television in numerous cases since the CATV entrepreneurs have shown a ready willingness to distribute ETV courses originated by educational facilities over their wired system to their individual subscribers. Generally, these programs and courses have been treated as a bonus feature further justifying the typical $125.00 installation charge and $5.00 monthly fee charged to individual subscribers. Thus, a choice of several commercial network programs and educational fare are purveyed for a fee although the latter type program is provided "free."

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[14] Fredette, A.P., "40,000 square mile Classroom," and "A Comment," C. M. Jansky, Jr., NAEB Journal, Vol. 20, pp. 1-5, May-June, 1961.

[15] Renner, John J., "ETV--A Challenge," Microwave Journal, October, 1962.

[16] "ETV Network Standards," NAEB, Pursuant to Contract, U.S. Office of Education, Department of Health, Education, and Welfare, December, 1963, (in process).

In a national survey undertaken in 1958 by the Joint Council on Educational Television,[17] 133 closed circuit systems were reported in use by 119 educational institutions involving primary, secondary, and college levels. Some institutions that use broadcast television also have a closed circuit installation or have plans for closed circuit television installation. In 1962, 96 colleges and universities reported closed circuit use and 162 institutions reported plans underway for such instructional television.

A six-channel CCTV system has been operating in Hagerstown, Maryland, serving 46 Washington County schools for over six years. Originally financed from foundation funding and with the assistance of various manufacturers and the Chesapeake and Potomac Telephone Company of Maryland, this system currently involves five production studios and over 30 teaching specialists who develop and present a tremendous range of primary and secondary school course material.[18] Another notable use of this technique has been in the "Chelsea Project" in PS33 and the surrounding neighborhood in New York City.[19]

Notable uses of CCTV exist at several major universities in the nation. The use of this medium for specialized professional training has found ready acceptance in the School of Dentistry at Ohio State and other extensive uses of medical television could be recounted. Privately owned and common-carrier cable interconnection has been used. In 1961, the Michigan Bell Telephone Company developed "round robin" closed circuit educational television facilities at Michigan State University. In a continuous-loop hookup, the system is arranged so that originations may be made at any building location on the round robin, thus permitting flexibility to meet the requirements of the University.[20]

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[17] Closed Circuit Television Installations in Educational Institutions, Joint Council on Educational Television and the Committee on Television of American Council on Education, Washington, D. C., July, 1958.

[18] Brugger, John T., "Television in Washington County Schools, Hagerstown, Maryland," Journal of the SMPTE, November, 1957.

[19] Theobald, J. J., "Closed Circuit Television--A Report of The Chelsea Project," Board of Education of the City of New York.

[20] Head, R. S., and Fulsher, H. D., "Round Robin Facilities for Closed Circuit ETV," American Institute of Electrical Engineers, Winter Meeting, New York, Nos. 62-371, January, 1962.

The armed forces have also made extensive use of CCTV for training purposes and some of these uses were reported extensively following the Third Armed Forces Television Conference held at Fort Lee, Virginia, in October, 1962. The most recent conference held at Lowery Air Force Base in Denver, Colorado, in the fall of 1963 is reported to have drawn over 500 registrants.

Perhaps the largest of the CCTV systems in use today is to be found in South Carolina. In January, 1963, the system encompassed 155 public high schools, four private colleges, four state colleges and the University of South Carolina and five Extension Centers. In five years appropriations were multiplied twenty-fold from $60,000 to $1,295,000. Southern Bell Telephone and Telegraph Company, Columbia, South Carolina, provides the interconnection facilities comprising an extensive cable and amplifier system network.[21]

CCTV and CATV wired into schools, colleges, and homes across the nation can provide a programmed and scheduled approach to learning. Through CATV sources many citizens have been able to observe at close range the educational fare being provided for their children. There are several hundred CATV systems now in existence in many states of the nation and the subscriber audience has been estimated to be about five million.[22]

AIRBORNE TELEVISION

The Midwest Program on Airborne Television Instruction (MPATI) started its first full academic year of the airborne program in September, 1961. From a modified DC-6 aircraft flying figure eight patterns four miles above Montpelier, Indiana, program material is radiated simultaneously on Channels 72 and 76 to schools and classrooms generally within a 200-mile radius. Tape recorded school course material is used in the aircraft to feed two transmitters, thus the airplane can beam history to high schools while sending music to the grade schools. If midwesterners desire, the airborne transmitters eventually may broadcast six courses at a time and a request has been filed with the Federal Communications Commission for use of Channels 72, 74, 76, 78, 80, and 82.

The television signals are broadcast by means of a 24-foot long retractable transmitting antenna that is lowered straight down from the underside of the aircraft once in flight and stabilized to maintain a vertical position. One plane is maintained on a standby status while the other flies during the program day. Each has a six-man crew, three flight crew members, and three television technicians. A typical school receiving the programs uses two UHF receivers or converters fed from individual antennas. Frequently, the program material is converted to a VHF channel for internal school distribution if a closed circuit system for general reception exists at the school. A school 50 to 100 miles from the aircraft, installing receiving sets in five classrooms plus the outside receiving antenna and related parts of the distribution system, can expect to pay approximately $500 per room.[23]

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[21] Kalmbach, R. Lynn, and W. R. Knight, Jr., "The South Carolina ETV Story," Part I and Part II, IEEE Convention Record, New York International Meeting, March, 1963.

[22] Lapin, Stanley P., "An Economical Instructional Television System," IEEE Convention Record, pp. 7-9: "CATV Systems Directory," Television Digest Factbook, Washington, D. C., pp. 887-992, 1962-1963 Edition: and "Guide to CCTV Sources," Wire and Communications Magazine, pp. 22-25, September, 1963.

Problems associated with the reception of sufficient direct to school signal from the airborne transmitter in larger metropolitan areas such as Cleveland, Chicago, and Detroit, due to line of sight difficulties have led to the request for supplementary translator facilities in these cities. Translators operate on UHF frequencies covered by Channels 70 to 83, and they are used normally to provide a receivable signal beyond the range of the main station, which they pick up with special receiving equipment and re-radiate. There is some indication also that difficulty is experienced directly beneath the hovering zone of the aircraft and that supplemental techniques may be necessary in this case also.

The following annotation from the MPATI petition for Rule Making filed with the Federal Communications Commission in January, 1963, is of interest.[24]

> "The evidence began to come in by the late fall of 1961 from the 2,000 odd schools and colleges in the six state region which were making some classroom use of the instructional materials. Most of these schools were receiving the UHF signals direct from the airborne transmitters over equipment especially installed for the purpose. Several hundred other schools in the greater Chicago area received about half the courses over their VHF receivers via rebroadcasts from WTTW--an ETV station in Chicago. Similarly, in Columbus, Ohio, some schools that wished to use one of the courses at a time different from that scheduled from the aircraft did so via rebroadcasts from the educational station WOSU-TV. With this widespread usage forming the testing ground, MPATI was able to assess the effects as follows..."

In the engineering exhibit accompanying the petition for proposed Rule Making,[25] it is proposed that the experimental operation engaged in to-date be converted to a regularly licensed operation and that a regular airborne service be established which would provide six educational services simultaneously. The use of six channels near the upper end of the UHF television broadcasting band was proposed and operation with 100 kilowatts visual and 10 kilowatts aural effective radiated power would be used. The aircraft would fly a ten-mile radius circle over Montpelier, Indiana. New propagation curves for signal coverage estimates are proposed and certain of the FCC channel assignment "taboos" are viewed as unnecessary.

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[23] "This is Airborne," Midwest Program on Airborne Television Instruction, Memorial Center, Purdue University, Lafayette, Indiana.

[24] Russell, Percy H., "Petition for Rule Making"Submitted by Midwest Program on Airborne Television Instruction, Inc., Washington, D. C., January 15, 1963.

[25] Wright, T. A., and A. Earl Cullum, Jr., "Engineering Exhibit--Petition for Rule Making to Authorize the Use of Airborne Television Transmitters," Dallas, Texas, January 11, 1963.

Westinghouse Electric Corporation, Air Arm Division, Baltimore, Maryland, has issued an extensive report dated July 31, 1963, dealing with educational television distribution by various methods including airborne.[26] Certain cost estimates contained therein were prepared by A. D. Ring and Associates, Consulting Engineers, Washington, D. C. Availability and conservation of frequency spectrum matters were considered, among other things, in relation to a possible nationwide airborne operation. It was pointed out that under certain assumptions Channels 66 through 83 (18 channels) would provide six program educational coverage of the country, leaving Channels 14 through 65 (52 channels) for nationwide coverage for services other than educational or for supplemental educational service.

The Federal Communications Commission has directed that those parties wishing to file comments in the Airborne Rule Making proceeding may do so by January 3, 1964. Reply comments will be accepted until February 3, 1964.

THE 2,500 MEGACYCLE INSTRUCTIONAL TELEVISION FIXED SERVICE

Excerpts from the FCC decision in July, August, 1963, establishing this multi-channel ETV distribution service give an excellent guide to its intended use.

> "1. On July 25, 1962, the Commission adopted a notice of proposed rule making in the above entitled matter, to meet the needs of educators for the transmission of visual and aural instructional material to students enrolled in courses of formal instruction. While it would be possible to receive the transmissions of the stations which would be authorized under the proposed rules in homes or other individual receiving locations, the most important function of the new service would be to reach groups of students assembled in classrooms or other similar places for the specific purpose of using the instructional material so transmitted. Therefore, the transmission from stations licensed in this service would be directed primarily to specific locations selected in advance by the licensee and equipped with suitable receivers by the licensee. While it may be technically feasible to conduct the operation on broadcast channels the success of the operations does not require the use of broadcast channels.
>
> "2. As a matter of fact, there are certain advantages in conducting this type of operation on non-broadcast channels. Most instructional TV systems will require more than one channel so that teaching material in several subjects may be transmitted

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[26] "Educational Television Distribution," Westinghouse Electric Corporation, Air Arm Division, Baltimore, Maryland, July 31, 1963.

> simultaneously. Multichannel assignments which are not available in most places on broadcast channels can be made in non-broadcast bands. By avoiding this unnecessary use of educational broadcast channels, they are left available for the transmission of cultural and educational programs designed for reception by the general public on receivers located in individual homes. Transmitter power in many cases can be used more efficiently because it may be concentrated in the directions of the selected receiving locations. Broadcasting is inherently wasteful of power because it must cover a wide area whether or not its signals are actually used by everyone in the area and it must provide a strong signal so that average home receiving installations which are not the most efficient will obtain reception. The ability to use power efficiently in a non-broadcast type of operation will permit the use of lower powered transmitters which cost less to buy and operate. While we have no specific data on the cost of receivers-converters for use in these bands, it is quite likely that they will cost more than similar UHF broadcast converters, perhaps twice as much. This may offset the saving in transmitter costs. However, when these receiver-converters are manufactured in quantity, the cost is likely to come down. Use of non-broadcast channels also provides a degree of privacy to the system because the average home will not be equipped with the special receiving apparatus needed to receive signals outside of regular TV broadcast bands and classification of the service brings it under the protection of section 605 of the Communications Act which is concerned with the unauthorized use of non-broadcast communications. The greater availability of channels in non-broadcast bands will provide for more independent systems wherein the selection and scheduling of instructional material can be tailored to the needs of the licensee."[27]

Other quotations from this Order are of interest as they relate to the new type of operation and they are excerpted below:

> "7. Although there is no suitable equipment currently available for operation in the 2500-2690 Mc/s band, several potential manufacturers stated that such equipment could be developed and indicated that they would pursue such development if the service were placed in the upper band."

> "21. The Commission made it abundantly clear in the notice of proposed rule making that the proposed new service was intended to supplement the educational television broadcast service and not to replace it. However, several parties suggested that we call the new service "Instructional Television Fixed Service" to avoid any confusion with the Educational Television Broadcast Service. Since the proposed term more accurately describes the principal function of the new service we are adopting the suggestion."

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[27] "Report and Order in Docket No. 14744, Establishment of a New Class of Educational Television Service for the Transmission of Instructional and Cultural Material," Federal Communications Commission, Federal Register, pp. 8103-8114, August 8, 1963.

"32. Section 4.935 relates to the amount of power that will be authorized. The use of excessive power creates an unwarranted interference hazard. The amount of power needed will vary from case to case. Applicants are expected to take advantage of all techniques which will provide as much signal as they need at all receiving locations in their system and at the same time avoid the radiation of excessive power in directions where no service is intended or far beyond the most distant receiver intended to be served. Ten watts of power out of the transmitter is considered to be a nominal amount of power and no special justification is needed for transmitter powers up to that amount. While the rules do not prohibit the use of higher transmitter powers we will examine such requests more critically to determine if the power requested is actually justified. That is why the rules adopted herein require a special showing where transmitter output of more than ten watts is proposed."

"50. Section 4.984 is concerned with retransmission of signals received from other stations. The provisions of section 605 of the Communications Act of 1934, as amended, prohibit the unauthorized publication or use of communications received by anyone from any station other than broadcasting or amateur stations. The rule adopted herein will permit the retransmission of programs received from broadcasting stations, or any other class of station including other stations in the new service, with the consent of the originating station."

Six groups of frequencies are set aside in the 2500 to 2690 Mc/s band and generally a licensee will normally be limited to not more than five channels selected from one of the groups for use in a given area. The frequency groups are so divided in the spectrum such that the spacing between adjacent channels in any one system will be 30 megacycles. Remote control of the new facilities will be permitted. Thus, educators now have a flexible new tool to meet the needs for their multichannel course distribution systems.

SATELLITE SYSTEMS

Telstar, built by AT&T, the first privately owned satellite, was launched July 10, 1962, by the National Aeronautics and Space Administration for a launching fee of $3,000,000. The orbit varied from 600 to 3,500 miles out into space. The equipment carried successfully received signals from ground stations on about 7,000 megacycles and retransmitted them back to earth using a transmitter power of about two watts and operating in the 4,000 megacycle range. Live television programs were exchanged this same day between the United States and the European Continent in England and France.[28]

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[28] "Radio and Television," Encyclopaedia Britannica Yearbook, pp. 680-681, 1963.

Some of the technical factors affecting possible utilization of satellite communications for educational purposes have been studied under sponsorship of NAEB.[29] Satellite capabilities today do not make it possible to broadcast worldwide educational TV into areas that are not equipped with a network of broadcasting stations and relatively expensive television receivers. However, if a ground-based broadcast system together with receivers in the hands of the public does exist, then a highly specialized and expensive satellite signal receiver can make a satellite pickup and become a source of distribution to such a national network.

Arthur C. Clarke, English scientist and author, foresaw the day when stationary satellites would make television available to everyone on Earth. He declared that:

> "Of all the applications of astronautics during the coming decade, I think the communications satellite the most important. ...it is now widely conceded that this may be the only way of establishing a truly global TV service. The political, commercial, and cultural implications of this, however, do not yet seem so thoroughly appreciated....
>
> "The printed word plays only a small part of this battle for the minds of largely illiterate populations, and even radio is limited in range and impact.
>
> "But when line-of-sight TV transmissions become possible from satellites directly overhead, the propaganda effect may be decisive, especially if it is coupled with a drive to produce simple and cheap battery operated receivers.
>
> "There could be few communities which would be unable to afford one set (in Ceylon there are dozens of radios blaring in every village) and when we consider the effect of TV upon our own ostensibly educated public, the impact upon the peoples of Asia and Africa may be overwhelming. It may determine whether Russian or English is the main language of the future."[30]

On Monday, November 25, as this nation mourned the death of assassinated President Kennedy, solemn ceremonies were broadcast "live" to 23 countries with a population of more than 600 million, the largest number ever to be assembled for a "live" program. Interconnection was via RELAY, the U. S. communications satellite produced by RCA and NASA. European countries participating were Belgium, Holland, Portugal, Spain, Great Britain, Ireland, Monaco, Austria, Finland, Norway, Denmark, Italy, Sweden, France, Yugoslavia, West Germany, and Switzerland. Other countries were Russia, Hungary, Czechoslovakia, Poland, Bulgaria, Roumania, and East Germany. Later in the day other rites were beamed "live" to Japan. On Wednesday, President Johnson's speech to Congress was video taped and then played back minutes after he had finished speaking and sent via Relay Satellite to 14 Western European countries.[31]

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[29] "Possible Utilization of Satellite Communications for Educational Purposes," Jansky & Bailey, Division of Atlantic Research Corporation, pp. 1-53, March 15, 1962.

[30] "The Next Ten Years in Space 1959-1969," Staff Report of the Select Committee on Astronautics and Space Exploration, Government Printing Office, pp. 1-221, 1959.

The first synchronous satellite 22,300 miles in altitude and having a rotational period corresponding to that of the Earth, which makes it apparently fixed with respect to a given position above the Earth's surface, was launched in 1963. Ultimately, if improved space rocket boosters permit, and a transmitter power of 60 kilowatts can be achieved aboard such a satellite, then direct broadcasting to typical receivers in home use today would be possible.[32] The derivation of such a figure in 1961 was undertaken as an academic speculation. Today, other engineers are foreseeing the possibility of such a system within a few years time. Certainly the use of all types of satellites will become an increasingly important factor in program or course distribution technology.

LASERS

Light Amplification by Stimulated Emission of Radiation seems destined to become a future signal distribution method of great and possibly revolutionary promise for broadcast and communication services. Development of the Microwave (MASER) discovery of Professor Townes of Columbia University and others about six years ago led to the optical MASER or LASER. Generation of coherent (single frequency) radiations in the light and near visible light regions of the spectrum at the order of ten cycles per second or in the frequency vicinity of one billion megacycles has opened up a totally new field of energy generation endeavor. When it is realized that prior to this advent, 50,000 megacycles was about the upper frequency limit of radio radiation concern and that the LASER domain is 20,000 times higher than this frequency, some appreciation can be gained for the necessity of talking in terms of electron absorption and emission rather than dipoles, wave guides, and radio wave generation so customary in our broadcast, communication, and radar terminology.

At frequencies so high that the six megacycle television channel width seems insignificant, speculation has turned to the possibility of simultaneous relay of many television signals together across the country or from satellite to satellite splitting off or adding new signal modulation information as needed. One potential is stated in terms of the relay of a thousand television channels across the country on a single light beam or possibly a beam in a hollow conductor.[33] Just three years old this past summer, great uses are prophesied in medicine, industry processes, and space communication.[34]

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[31] "Televisions Largest Audience," Broadcasting Magazine, pp. 56-58, December 2, 1963.

[32] Felker, J. H., "Satellite Relays and Broadcasting," Broadcast Engineering, October, 1961.

[33] "The LASER--Infant with a Bright Future," Sperryscope, pp. 14-17, Vol. 16, No. 5, Second Quarter, 1963.

[34] Oliver, B. M., "Some Potentialities of Optical Masers," Proceedings of the IRE, pp. 135-141, February, 1962.

Mr. Oliver, in the foregoing reference, using current mathematical indications, hypothesizes an 80 milliwatt (about one-tenth of a watt), gaseous continuous wave LASER with receiving and transmitting apertures of two inches in diameter that would carry a four megacycle television channel with a 40 db signal-to-noise ratio being maintained for a distance of 4,000 miles. While this is being done today, with many amplifying repeaters intervening, the LASER signal would go the whole distance without any amplifying boosters along the way! While transmission medium losses and beam benders would reduce this distance by about one-tenth, one can begin to appreciate the new threshold of development which looms before us.

Experiments in 1962 with the techniques for modulating and demodulating or the insertion of television material on the coherent light "carrier" and retrieval of the TV signal at the receiver have been successfully carried out over short distances in the laboratory. These are significant as the first steps in the practical application of such techniques in the communication and broadcast relay field.

With this kaleidoscopic array of communication distribution technology, some in common use today, some ready for use, and some giving promise of emerging dramatically from the laboratory, the educator has at his command a fantastic modern genie to assist him with his educational processes. As he pushes forward with his application of these devices, to keep pace with the population explosion and the ever-increasing burden of more rapid decision making in a shrinking world, one can sense the need for a proper orchestration for which the educator will have to write the score, using the new notes he fosters by his very educational processes. Now we can glipse a bit more fully the intellectronics, "total communications," and "man machine coupling" to which our scientists and engineers refer and bring forth into being.

EDUCATIONAL TELEVISION TECHNOLOGY
EQUIPMENT DEVELOPMENTS

By
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Commercial broadcast television soared to enthusiastic acceptance in the United States during 1946-1947. Today, nearly eighteen years later, educational television is doing the same but with a radical and most fortunate difference. The technical equipment for television is vastly better today than it was eighteen years ago. Our free enterprise system, with its inherent ability to improve, compete and to test out new techniques and ideas, has removed a major, if not a fatal, stumbling block to educational TV during the early 1950's. Commercial television has borne the agony and expense of trying and testing many equipment designs, operational concepts, and production techniques. Today ETV can build on this backlog of development and experience.

For instance, consider kinescope recording equipment. In the earlier days of television, and even as little as five years ago, kinescope recording varied between barely acceptable, at best, to completely unusable on the poorer occasions. Background noise, grey scale, shutter bar interference, phosphor lag, and distorted audio all were major problems. A solution to one problem seemed to be made only at the expense of the others. Today, phosphors, lenses, shutters, video circuits, and film have been developed for recording systems that exceed the capabilities of 16mm film.[1] Additionally, new high speed processing techniques, lenticular film, and recent improvements in 8mm film open new areas of usage for film equipment. Today, educational television needs and uses as much film as ever. Its use is not decreasing, but tends rather to be increasing. This is in spite of the tremendous use of video tape recordings.

Perhaps the most significant equipment development in eighteen years of television would be the video tape recorder. This equipment shook the television industry when it was first introduced, and today it still is shaking the industry to its operational, programming, and production roots. Every well designed broadcast or closed circuit educational television facility includes at least one and usually several video tape recorders. The reasons, of course, are well known. The recorder permits production, revue, and distribution techniques that were virtually impossible before. Immediate play back, very high technical quality, and the re-use of the tape are among the more notable advantages of video tape.

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[1] Simplified Operating Practices for Studio Cameras, Joe Flarety, 16mm File Prints Available from CBS Television Network, 1963

Educational use of video tape faces a perplexing dilemma today, however. Video tape recorders are on the market ranging in cost from about $10,000 to $75,000. What machine should be purchased? First, notice the two basic methods of video head scanning. The larger, more expensive machines use a transverse tape of one or two inches width. The transverse scan machines have been "standardized" in technique to permit taped programs to be effectively interchanged with other similar machines. Additionally, the transverse scan system has reached a high degree of sophistication during more than seven years of intensive development. There are two American and three foreign manufacturers[2] of transverse scan recorders, each basically similar to the others but differing somewhat in operating and accessory features.[3] Minimum cost for a complete transverse scan recorder is about $40,000, but accessories and special optional equipment frequently will add $25,000 to $35,000 more to the cost. Several manufacturers offer recorders that are completely solid state except for picture and waveform monitors for lower space, heat, and power requirements.

The helical scan equipment recently appeared on the market from at least two American and two foreign manufacturers. Unlike the transverse scan recorders, helical scan equipment is completely unstandardized. Each manufacturer uses his own techniques and designs, none of which is compatible with other machines, and only rarely compatible with a machine of similar model. Thus, the helical scan units have a basic and very serious drawback at the present time of complete non-compatibility. A recorded video tape must be played back on a machine of similar model and frequently on the same machine on which it was recorded. In their present stage of development, helical scan recorders are not suitable for program production for broadcast stations or high quality closed circuit applications. Their low price ($10,000 - $15,000) and small size (large suitcase) does make them very appealing for special applications such as training aids, medium quality closed circuit applications, military surveillance, and equipment studies. The helical scan recorders have been used with special additional stabilizing equipment by several commercial broadcast stations for news event recording where portability is essential and the lower video quality can be tolerated. Until the helical scan recorders are standardized to permit interchanging of recorded tapes, their use in educational television will tend to remain as training aids, secondary type services, and limited quality equipment for specialized applications.

Let us consider next what has happened to television cameras. Up through the late 1940's and early 1950's, the iconoscope was the film camera tube and the 5820 image orthicon was the live camera tube. During the early and mid-1950's the vidicon camera was developed with its vastly better quality to become the accepted "standard" film camera. Its simplicity of operation, low internal noise, and excellent picture quality have virtually relegated the iconoscope to the junk heap or a museum piece. Because the vidicon is basically simple in operation, and small in size, it was soon tried as a live camera in special applications. A severe limitation of the vidicon for live camera usage is the need for relatively high light levels on the televised scene. Recent developments in the vidicon tube have improved its sensitivity so that more reasonable light levels can be used. The "plumbicon" is the most recent of vidicon developments and can be expected, with its increased sensitivity, to widen vidicon camera usage to many areas formerly considered the exclusive domain of image orthicon cameras.

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[2] RCA, Ampex, Shiba, Nippon Electric, and Fernseh GMBH

[3] Joseph Roizen, "Television Tape Techniques Today," Broadcast Engineering, Nov. 1963

Image orthicon cameras have been the basic live camera for many years in spite of many severe shortcomings. The image orthicon is basically a complex tube, expensive, requiring complicated external circuitry, and until recently rather unstable in operation. The tube will produce excellent pictures with very low light levels, and possesses characteristics which makes it very tolerant of varying light conditions. This latter property has been used to offset improperly lighted studio scenes or uncontrollable outdoor scenes. The instability of image orthicons has been caused by thermal and electrical variations of critical adjustments during operation requiring frequent adjustment. The demand for extra high camera quality and stability for video tape master recordings has evolved a new tube development and radically redesigned camera circuits. The four and one-half inch image orthicon tube and cameras have solved the problems of instability through improved regulation of critical circuits, and picture quality has been noticeably improved. The tube complexity, expense, and complicated circuitry, however, still remain.

What is ahead for the live television camera? First, the image orthicon in both three and four and one-half inch sizes will probably remain as the "standard" for high quality studio productions. The large size, heavy weight, and complexity of image orthicons are not disadvantages in studios; in fact, their weight is an advantage in achieving smooth mechanical operation. Vidicons can be expected to be used in increasing amounts for studio usage where the production is simple or does not require elaborate staging. Vidicons can also be expected to be used increasingly in special event, news, sports, and other remote pickup applications. Their compact size and improved light sensitivity make them a natural choice for outdoor remote pickups. One European manufacturer[4] has developed a lightweight battery operated wireless television camera that offers new horizons in portable video cameras. With no wires to restrict his movements, but still with complete central syncronizing and communications control, the operator can be truly mobile in operation.

What else does television technology offer today? It may be summarized that virtually all equipment from camera to transmitter, from switching equipment to microwave repeaters have been undergoing radical evolutionary changes during the past two to five years. The heart of most of these changes has been solid state circuitry; the results have been improved pictures and operating techniques; the bonuses have been more compact equipment, lower heat loads, improved equipment stability, and less maintenance.

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[4] Fernseh GMBH

Solid state components such as transistors and diodes have literally revolutionized television equipment. With a very few exceptions, solid state components in properly designed circuits yield many significant advantages over similar circuits using vacuum tubes. But the evolutionary cycle of equipment development doesn't seem to end. One concept now appearing in commercial equipment is the "plug-in module." This permits very rapid replacement of entire circuits for faster maintenance and service. Additionally, modifications and changes can be readily made on basic systems with negligible outage or "down" time. Already, some users of plug-in modular equipment have found that repairs of defective circuit boards are too costly. A new board can be purchased and installed at less expense than paying a maintenance technician to repair it. Actually, we have been doing this for years with vacuum tubes. No one would dream of repairing a defective vacuum tube, simply because a new replacement can be purchased for a few dollars at any radio shop, and in some cases, even at the corner drug store. The disposable circuit module soon may be the next evolutionary step.

Modern television equipment is expensive; but so is obsolete equipment. ETV has a monumental task to perform and finite operating budgets with which to do it. Modern equipment will produce better pictures and sound. Modern equipment will cost substantially less to operate and maintain. Modern equipment has smaller requirements for expensive building space and air-conditioning equipment. Modern equipment is readily available, and ETV must use it to achieve the tasks to be performed.

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ECONOMICS OF INSTRUCTIONAL TELEVISION

By
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I hope that we can agree here that the costs of instructional television are subject to many variations. Nevertheless, we will try to shed some light on the question of costs.

In an examination of costs, we must not only admit that there are infinite variations, but we must grant too that the situation changes rapidly and constantly. Television is on the growing edge of technology. It had characteristics four or five years ago which seem both remote and almost simple today. We can hardly doubt that change and development will continue to be rapid for several or many years to come. For example, just five years ago we wrote a little paper on the costs of ITV.[1] It wasn't outstanding, but it looked adequate then and it has a few merits still. However, the paper intentionally ignored any consideration of video tape recording and the cost implications of using video tape, because there was no basis for estimating effects. Now, five years later, it would be foolish to ignore video tape. Many ITV installations have recorders, and, from what we see, most operators who lack video tape wish desparately that they had it. Not only does it work well, opening up new possibilities, but hourly operating costs are perhaps $10 to $15, as opposed to double, treble, or quadruple that cost for staffing and operating the television studio.

If it is true that television technology doesn't stand still, then it is doubly true of video tape recording. Costs associated with video tape are changing as rapidly as is the state of the art. Fortunately, it appears that these costs are always moving downward. Originally, the recorder represented about a $50,000 to $60,000 investment. Costs for tape material were also high, with a one hour tape costing about $200. Before long, recorders appeared which promised to halve the investment in equipment. Still later, the possibility of another 50% reduction appeared. Now, the British are suggesting that a recorder, the TELCAN, may be offered at a price under $1,000--perhaps under $500--and not all of the cost story is based on machine investment. The first of the marketed machines advanced the tape at the rate of 15 inches per second, thus requiring the $200 investment in a one hour tape. Now, machine modifications can reduce the speed by half. For the institution which has 100 tapes in its growing library, this reduction alone saves an investment of about $10,000.

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[1] "Comparative Costs for Televised and Conventional Instruction," Audio Visual Communication Review, Vol. VII, No. 4 (Fall, 1959).

If we have overstressed the uncertainties and the variabilities of instructional television costs, it is regrettable, yet it is also a reality and deserves more than a passing glance. We will try, though, in the remaining remarks to consider costs and cost factors that can be more concretely discussed.

Five years ago it seemed satisfactory to think in terms of four principal factors which influence the costs of instructional television. The first of these is the salary level of the television teacher. For college and university teachers, we then assumed a teaching load equal to twelve classroom contact hours per week, and we studied costs under three conditions or levels of salary; $6,000, $7,500, and $9,000. Remember, that was five years ago. Today, we should probably forget the lower salary figure and add a hypothetical $12,000 salary to the picture. This higher salary may not be realistic for secondary schools, but it certainly is realistic for many, if not for most, universities.

The second factor worth considering is the release time allowance given to the television teacher. Even though some television teachers ask and receive no special consideration for their efforts, it is typical to allow release time in the ratio of two for one, three for one, or even four for one. At Purdue and at many other institutions, release time of two for one is fairly common. In effect, then, the television teacher teaches perhaps a three hour course and receives credit for six hours on his teaching load. In calculating costs, the release time factor operates as a multiplier of teacher salary costs.

The third factor--and an important one--is the hourly operating cost of the television facility. Five years ago, it seemed that estimated costs of $20 and $30 per hour of use were representative of the mid-range of costs. Our own experience justified these figures, and the second of the two major reports from Pennsylvania State University[2] gave cost figures which fell neatly in the middle of the $20-$30 mid-range. If someone wishes to argue that he can operate for $10 an hour, or that he can't operate for less than $50 or even $100, few will doubt him. We would even grant that an hourly cost of $40 may be more representative today.

Some points worth considering in arriving at an hourly cost are these: a single studio, two camera closed circuit system may cost somewhere in the range of $30,000 to $60,000. Within the cost, we can assume that coaxial connections with classrooms have been provided and that 20 or more classrooms are equipped with receivers. The amount of use each year can be estimated at 1,000 to 1,300 hours. Recent experience at Purdue has shown approximately 1,200 use hours per year and other institutions match this. If the 1,200 hour figure is granted, and if a $30 hourly use cost is assumed, then the television operation has an annual budget of $36,000 for staff salaries, maintenance, supplies, and amortization of the investment. No one is foolish enough to suppose that $36,000 will cover a year of resounding educational spectaculars, but necessary expenses have been met with such a budget.

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[2] Carpenter, C. R. and Greenhill, L. P. An Investigation of Closed Circuit Television for Teaching University Courses--Report Number Two. Pennsylvania State University, University Park, Pa., 1958.

The fourth factor in the costs is the expense of providing classroom and other related assistance to the television teacher. At the college-university level, this normally is translated to mean graduate assistants. These assistants will be responsible for such duties as conducting discussion sessions, supervising classrooms during television periods, grading examinations, counseling students, and everything else that may be the lot of an academic coolie-laborer.

To review, then, the four cost factors which are common and necessary to consider are instructor salary level, instructor release time, hourly operating costs for the television facility and salaries of the teaching assistants.

Now, to avoid repeating our omission of five years ago, some words should be said about video tape recordings and their use. The best of the recorders can be purchased now for something less than $50,000. Assuming a ten year life, which is completely within reason, the amortization of the investment would be a $5,000 item annually. In addition, an engineer will be needed. About $7,500 will pay his salary. Standard maintenance and parts will be perhaps $1,500. Finally, the destruction of tape and the interest on the investment in a library of tapes can easily be $2,000. On an annual basis, the budget for video tape recording would be about $16,000. If the machine, like the studio, is used 1,200 hours per year, the hourly cost is a little more than $13. This, of course, is not quite as good as it looks, since it is an additional expense when recordings are being made. For example, if the hourly cost for studio and related personnel is $30, then an hour in which a recording is made costs about $43. The second blemish on this rosy picture is that a series of instructional tapes is not likely to remain unchanged for very long. It should be safe to suppose that 10% to 20% of the recorded tapes in a series will be re-recorded each semester. This will not be a major source of increased costs, but it is only realistic to assume that teachers will want to try for improvements on a noticeable fraction of their recordings.

In contrasting costs for televised teaching and for conventional teaching, we must use quite a few suppositions. With some luck, a few suppositions will be liberal with money and others will be conservative. Hopefully, the extremes will offset one another.

For conventional instruction, there are many costs besides the teacher's salary, but we will ignore them. Classroom heating, library services, and many other costs could be listed, but there is no reason to suppose these are different costs for conventional teaching than for television. As an example of conventional teaching costs, let's assume that students are to be taught by a teacher who earns $9,000 for two semesters of work. Assume, also, that the teacher carries a teaching load of twelve classroom hours per week. Finally, assume that class size is 30 students. Under these conditions, the instructional cost is about $12 per student per credit hour. This is fairly expensive teaching. If we could fire this hypothetical teacher and hire another for $6,000, the cost per student per credit hour would be about $8.50.

With these costs as a background, visualize a television alternative. In the alternative, pay the instructor $9,000 salary for two semesters. Give him release time in the ratio of three for one. With this, a three credit course would be entered on his record as if it were a nine credit course. In addition, give him a graduate student to oversee each group of 30 television students. Under these conditions, our hypothetical case would have a cost picture something like this: for 120 students, the cost per credit hour would be about $16.50. For 180 students, cost would drop to about $12.00. For 240 students, it would drop to about $9.50. If you could arrange for the system to handle 420 students at one time, the cost would be down to about $6.50.

In this example, TV costs become equal to conventional teaching costs--also with a $9,000 teacher--when TV enrollment reached about 180 students. TV became competitive with the $6,000 teacher when enrollment reached about 240 students, even though the television teacher receives a higher base salary, has the use of the television facility and the help provided by its staff, receives an attractive amount of release time, and is aided by a group of teaching assistants. This example shows at least two things which deserve restatement. First, when fairly expensive forms of conventional teaching are used as a basis for comparison, it is not at all impossible to offer significant cost savings. This is not altogether supposition; it can be documented with adequate information from case histories. Second, it must be stressed that the major costs of teaching by television are present as soon as the first student is taught; each additional student may add some further cost, but this is miniscule in comparison. The same is not true for the more conventional forms of teaching. Conventionally, once class size and instructor salary are decided, the cost burden for the first and nth class or section are nearly the same, if not identical.

In closing, two words of caution seem in order. The first of these is that television teaching can, under some conditions, offer clear cost savings, but no one guarantees that it will, at least not immediately. Until educators are more familiar with the medium, it would seem foolish to seek only those uses which are financially advantageous. It may take several years for an institution to build faculty use of and respect for the system; any institution employing television can attest to this. Even when the system reaches the point of full use, it is improbable that every televised course will be defended on the basis of its cost savings. True, a few of the courses may be of the sort that warms hearts in the fiscal office, but others may be teaching only 80 students or some similarly small number and these, it seems, are the price of progress.

Second, over-concentration on financial savings can trap the unwary. It can create expenses which seemed originally divorced from the decision to use television. The easiest explanation comes in the form of an example. Suppose that the enrollment in freshman chemistry is 800 students and that these students constitute the vast majority of the freshman class. Suppose, too, that your television facilities are adequate to accommodate all 800 students in classrooms at one time. You are attracted, of course, by the prospect of distributing teacher and facility costs over 800 students, all at one time. Having made that decision, what becomes of the schedules in freshman English, in general biology, in modern languages? Quite possibly, the periodic removal of 800 freshmen from all alternative courses temporarily stagnates operations in other departments of the school. Where specialized facilities, such as those for language instruction, biology, and physics have been vacated, very real cost implications can be found. It is, therefore, suggested that block scheduling of hundreds of students always be examined for its effects on other parts of the instructional program. Even though the television facilities may be adequate to accommodate very large numbers simultaneously, this will not inevitably be the most prudent choice.

The surprising thing is that televised teaching works; with it, students can learn many things well. The interesting and tantilizing prospect, to some, is that it can save money, even though not automatically. But the challenge is to find how to use it, when to use it, and when to be casual about its costs.

THE PROFESSIONAL RIGHTS AND RESPONSIBILITIES OF TELEVISION TEACHERS[1]

By
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National Education Association

... Is a television teacher a professional actor/performer or a teacher?
... Should on-camera television teaching be considered a special assignment entitling the teacher to higher compensation?
... What constitutes an equitable teaching load for a TV teacher?
... Do teachers have residual rights in programs which they have created and which are used again and again by their own school district? If so, what are these rights?
... Should TV teachers receive additional compensation when their programs are video taped and re-used within their school district and/or by other school districts?
... Under what conditions does the teacher have both the right and responsibility to revise his recorded materials? What arrangements should be made about time and salary for the teacher who makes such revisions?
... Should TV teachers be subject to the same contracts as other teachers or should they be given special contracts? If the latter, what should such contracts include?
... Should teachers sign a release to permit re-use of their materials into perpetuity?

The advent of television in instruction has brought into focus these and many other questions which need to be resolved by the profession with all deliberate speed if television is to serve education to the fullest.

But these problems and questions are not peculiar only to educational television! The same questions which are asked regarding the teacher's rights in television programming can also be asked in regard to his rights in programming on other media as well. Television is simply the initial beachhead for skirmishes which will likely spread to programming and use of other media in the future. Other types of media and materials that will likely feel the impact of these issues might be enumerated as follows:

1. Educational television programs ("lessons")--live and recorded
2. Radio programs
3. Programmed learning materials
4. Educational films

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[1] A Policy Statement adopted by National Education Association, June 29, 1963

5. Sound recordings (phonograph disc, magnetic disc and tape, film recordings)

6. Filmstrips, slides and other transparent materials for projection

7. Micro-reproductions

8. Maps

9. Copying services, including micro-photography

10. Storage and retrieval systems, computers, IBM, etc.

11. Other

Unquestionably, teachers who are creating programs for use on television and other new media have a professional stake in these new developments. With the introduction and rapid rise of technology in education, the profession is faced for the first time with professional, legal, and ethical problems which are both "sticky" and complicated. These are problems which the profession did not have to face 20, 10, or even 5 years ago!

Educators presently find few guidelines to assist them in making policy decisions which are particularly crucial during this period when technological advances of all types are finding their place in education. There can be little doubt that considered judgment and resolute action are needed if these new developments are to be wisely incorporated into educational programs, with practices that are fair and just to all parties concerned.

NEA Takes Action

Recognizing that the profession needs insight and direction in order to understand and resolve problems which are arising in this area, the NEA has been exploring for the past two years a constellation of problems relating to the professional rights and responsibilities of teachers engaged in new media developments, particularly television. In March, 1962, the NEA convened a national conference to identify and deal with these issues, involving not only NEA organizations but representatives of other educational and media groups as well. The conference made several recommendations:

1. That NEA set up a special project to deal with the complex issues arising in this general area. (This was done in July, 1962.)

2. That NEA provide tentative guidelines for school administrators and teachers who are engaged in television programming.

3. That NEA obtain legal counsel to advise teachers on these issues.

4. That NEA plan for grass root discussions of these problems at NEA departmental meetings in order to acquaint teachers with their rights and responsibilities in these matters.

5. That NEA collect a file of available TV teacher contracts which now are in use.

6. That NEA make a survey of practices in selected school systems.

In October, 1962, immediately following the strike on WNDT (New York City's educational station), the Executive Committee of NEA issued a tentative guidelines policy statement on these matters and directed that this statement be discussed in a series of "national conversations" throughout the school year in order to get reactions and suggestions as to necessary revisions. The Executive Committee also requested that appropriate action be taken to protect teachers from exploitation as these developments gain momentum.

During the school year just closed, The Executive Committee's guidelines statement has been widely discussed at national, regional and state conferences of classroom teachers, superintendents, supervisors of instruction, television teachers, and media specialists. These discussions were lively and spirited, often characterized by considerable controversy. Each group drafted changes in the original statement or developed a revised statement of its own. An _ad hoc_ committee of nine individuals, representative of some of the major conferences held, then drafted the final statement which was adopted by the NEA Board of Directors on June 29, 1963, as an official policy statement of the National Education Association. The project staff also has conducted during this school year a survey of selected school systems to determine practices and policies now in operation relative to television teachers.

Some Emerging Underlying Generalizations

Throughout the national conversations several generalizations emerged, however, which seem to be basic in the thinking of most of the groups--and which were reflected in the final official policy statement which was adopted:

1. A national formula for TV teaching (spelling out compensation, work load, re-use, etc.) cannot be developed because of differences in ownership of stations, purposes and techniques of television teaching, and policies of individual institutions. Guidelines can, however, be established.

2. Policies adopted in this area should be _consistent_ with _local_ procedures and practices relating to other teachers also on special assignment within the school program.

3. Policies should be developed cooperatively with the participants. TV teachers should be involved in determination of any policy which affects them.

4. Policies should spell out the professional rights and responsibilities of both the investor and the participant--i.e., the school district and the TV teacher.

5. Policies should be written agreements specifying any rights which are reserved. (Attorneys advise that teachers have no rights unless they are expressly reserved in writing. In effect, there is no such thing as "residual rights" which are due teachers simply because they are teachers or citizens. Such rights must be spelled out in writing.)

6. Written policies should cover compensation, working conditions, supplementary held and reserved rights in re-use of materials and in revisions.

7. Policies should be subject to periodic review since the field is so dynamic.

8. Insofar as possible, there should be a free exchange of information among members of the profession.

Major Policy Guidelines

The official policy statement adopted by the NEA underlines certain key points of agreement relative to the professional rights of TV teachers:

1. That television teachers should be professional educators--not professional actors--and should be allowed to choose the professional organization which speaks for them in matters of negotiation with boards of education and with college trustees.

2. That TV teachers should be entitled to share in any revenues received from the sale or rental of their programs. (This might be done by paying TV teacher initially more per year while he is on this assignment, or by paying a royalty per program.)

3. That TV teachers should have the right--and responsibility--to revise and edit his materials and to even withdraw them on certain conditions, in order to avoid programming obsolescence.

4. That TV teachers should receive the same benefits as other teachers who are on special assignment.

5. That television teaching should be considered a full-time assignment if quality programs are to result. A supporting staff of graphics and production persons is also essential.

6. Television teaching is a team operation--not a "star" solo performance. To be effective it must be a team effort including the receiving teacher, curriculum coordinator, content specialist, producer, and others.

7. The TV teacher should be in the employ of the school district or university at all times and subject to all the same benefits to which other special teachers in the school program are entitled.

Some Areas of Controversy

During the grass roots discussions held throughout the nation, several areas of conflict arose among the participants. Shades of differences in viewpoints were evident from the start and the differences were not between one group and another (i.e., between TV teachers and classroom teachers, or between superintendents and TV teachers). There was evident a wide range of differences in points of view even among TV teachers themselves. In some instances, these differences were greater within the TV teacher ranks--between public school and college levels or between teachers on the West and East Coasts. One major controversial area, as one might expect, arose between the viewpoints of school administrators and TV teachers on the matter of additional compensation. Should the TV teacher be paid more than the classroom teacher? There are, of course, two sides to the question.

The TV teacher viewpoint maintained that additional compensation is justified for a number of reasons:

... He has an enlarged area of responsibility for which he should be paid more. He is teaching several hundred students at one time whereas the classroom teacher has 35 to 40 in most instances.

... He is a demonstration teacher teaching before hundreds of his colleagues.

... He puts his professional career on the line once he's "in a can and circulated around the country."

... He must always be in a "go" position. He cannot have an "off day."

... Something of the TV teacher himself is captured on the video recording.

... Considerable emotional and physical strain is involved in TV teaching.

... The demand for his services as a consultant increases and he inherits more work as a result.

... TV teaching is a creative art which should be adequately compensated.

On the other side of the coin, the administrator argued in many instances that a single salary schedule should apply regardless of whether you were teaching on TV or in the classroom and gave these reasons for his viewpoint:

... The TV teaching assignment is a teaching assignment primarily and television secondarily. Education doesn't change just because it goes on camera. As a teacher he should receive the same benefits--and salary--as other teachers receive.

... The TV teaching assignment is performed on school time and the program thus produced belongs to the school system and not the teacher. The teacher assigned to TV is paid for his work as are other teachers. He did the TV assignment in lieu of something else. All teachers are subject to assignment.

... The major investment in the program and the tape was made by the employing institution.

... The TV teacher will likely get a better position later as a result. (Many superintendents recalled that TV teachers often were promoted to a principalship or to a supervisory assignment and never did "go back" to the classroom!)

... TV teaching is a team proposition. If, therefore, the TV teacher gets more money, what about higher pay for other members of the team? Where do you draw the line?

... The cost of operating an ETV facility is a very expensive undertaking even under the most ideal circumstances. The necessity of having to pay TV teachers more would impose an additional hardship on the administration and in some cases make operating costs prohibitive.

The controversy went on and on, with each side having to make compromises along the way. Other areas of controversy revolved around the method of compensation--whether larger payment at the outset for release of all future rights or royalty payments; compensation for revision and re-editing; compensation for re-use within the school system and for extended use outside the district. There was, for example, a rather widespread viewpoint that where no outside revenue is involved in the re-use and where lessons were re-used within the same academic situation for which they were originally produced, no additional compensation need be made. Not all TV teachers would subscribe to this, however!

In one large general area there was rather unanimous agreement. TV teachers have certain rights which, though not inalienable, should be and must be reserved in writing. These include the right to update materials which have become obsolete; the right to be informed when their programs are re-used by other school districts and universities; the right to be a party to negotiations on matters which affect them; the right to share in any income received from the sale or rental of their programs; the right to be given adequate time for preparation of programs. A majority--but not all--of the participants in the various conferences likewise felt that the TV teacher should have the right to decide where a given program will be used and under what conditions. For example, some TV teachers want the right to prohibit a segregated school district from using their program. They maintain that they would not teach in a segregated school district themselves; therefore, they would not want their program used in a segregated district. One conferee asked, "Would the opposite situation also hold?"

NEA Survey of Practices

In a survey of practices being followed by local school districts in regard to these matters, the NEA found that practices vary widely from well thought out policies and procedures to haphazard ones. This is to be expected in an area which is so new and expanding as rapidly as is educational television. In summary, however, in a poll of 40 large city and county school districts, the following practices might be reported:

1. Work load for TV teachers ranges from one 20-minute program per week requirement in one school system to one 30-minute program daily. The average load is 80 to 100 minutes per week.

2. Compensation also varies--supervisory status is granted to TV teachers in one city; $500 additional is given per semester in another; 10% more annually is provided in another; $60 monthly

in several others; extra summer employment in still others. In one city, TV teachers receive $25 to $150 per program according to subject and type of program.

3. As to revision rights, the usual pattern seems to be three years and this "by common consent" or "mutual understanding."
4. Most cities tape their programs for future use. A few large cities are exceptions to this, however.
5. Most TV teachers presently get released time but no additional compensation.
6. Most systems do not presently pay TV teachers more for re-use within the district or outside. There is a slight margin in the direction of paying more when programs are used outside rather than within the district.
7. College teaching is most frequently done as an extra assignment. Not so in public schools where released time is given.

In Conclusion

There are no magical solutions to these knotty questions. The above practices should not be considered as adequate solutions in any sense. They only reflect practice--unguided and misguided, in some cases--at the moment. They report what is and not what should be. Equitable conditions are difficult to achieve. The National Education Association, in establishing guidelines in this rapidly evolving area of concern, recognizes that such guidelines must necessarily be subject to such future changes as continued experience may justify.

KEY DISTURBANCE AREAS

1. Personnel Problems
    - a. Teaching load and released time
    - b. Compensation
    - c. Contractual agreements
    - d. Unions
    - e. Re-use by school district
    - f. Use by other districts, networks
    - g. Time and salary for revision work

2. Copyright and Residual Rights
    - a. Of broadcast and re-broadcast materials
        - (1) By whom
        - (2) Royalties
    - b. Of related materials (study guides, visuals for use on television)
        - (1) By whom
        - (2) Royalties
    - c. Use of copyrighted materials
        - (1) Fair use
        - (2) Reproduction

3. Professional Standards
    - a. Institutional accreditation
        - (1) Graduate television courses?
        - (2) Under-graduate television courses?
        - (3) Programmed courses?
    - b. Certification of television and/or classroom teachers
        - (1) In total teaching?
        - (2) In supplemental teaching?

4. Problems of Control and Autonomy
    - a. Curriculum problems: relations of state, regional, national networks to local school authority and control of curriculum
    - b. Relationships between regional, state, and local programming
    - c. Financing--multi-school district

5. Professional Ethics
    - a. "Featherbedding"
    - b. Free exchange versus extra pay
    - c. "Outpricing" new developments

ITV LEGAL PROBLEMS--COPYRIGHT, CLEARANCE, OWNERSHIP

By
Fred Siebert, Dean, College of Communication Arts
Michigan State University

I have accepted an assignment from the American Council on Education to make a study of three groups of problems under the auspices of the U. S. Office of Education which financed the project.

The report itself is double-spaced and runs 96 pages; the appendices are single spaced and run 125 pages. I am presenting, here, an outline of the sections of the project and proceding to discuss only those sections in which this group may have a particular interest. (Editor's Note: This material is found at the conclusion of this speech.)

The first page of the outline presents the Table of Contents. The second page is the List of Appendices, which consists of sample contracts, and policy statements of various types for use by various types of educational institutions. The staff memoranda may have interest for some. Part IV is presented in its entirety, for these are the recommendations of the report calling for some future activity or action.

There are three sets of problems. The rights and compensations for teachers in educational programs for the media, Part III, has been discussed in this seminar. I shall confine myself as far as possible to Parts I and II, Protection for Educational Programs which are prepared for the new media. How do you protect your programs from unauthorized uses? What steps should you take? What material can you use in the preparation of your programs? This was not a very serious problem when we just had radio. It became more serious when we got television. It became quite serious when we got video tapes and other types of audio tapes. It raises many questions, especially when you enter into the problems of the re-use of the programs which are produced when they are more than live.

As most of you know, our present copyright act was passed by Congress in 1909. It is quite out of date in many aspects and it has been amended occasionally, but it needs a complete and thorough revision. This, the Copyright Office has undertaken to do, and it has spent a considerable amount of time and money on studies looking toward the revision of the Copyright Act. It has been holding panel sessions in Washington for discussion of its proposed revision.

If Congress has many serious problems before it, it's not going to take the time necessary to enact a new Copyright Act. If all the people who have problems in the field of copyright can mutually solve them and agree on a solution, then Congress is likely to accept that solution and pass a revised act. But, if there is wide controversy between various groups who want different types of provisions in the Copyright Act, I don't think Congress is going to take time to solve those problems at this particular time.

Let me give you an example. When does publication take place? This is a technical term. It's quite important, because you can rely without any formalities on the common law of copyright or literary property. But once you publish, then you lose those rights, and unless you copyright and perform the formalities of the copyright statute, you have no rights. So the question of whether it's published is quite important.

At the present time, the law is that performance is not publication. It means that you could run a motion picture indefinitely. It means you could put on a play, or a performance, no matter how often or to how wide an audience, and still not have published. You could retain your original rights in the production, even though it is performed publicly without complying with the formalities of the Copyright Act. The Copyright Office wishes to change this and to put into the act the provision which would make performance a publication. I understand that there's been quite a bit of objection to it. The people who represent playrights, the motion picture industry, etc., object to this. So whether or not it will be included in the final draft, I don't know. If problems like this can be solved to the satisfaction of all the interests concerned, then I think Congress would enact such agreements into copyright law.

In connection with the revision of the Copyright Act, one of the problems that is of the greatest interest to educational television is the proposal to take away the present provision which permits the use of other people's material when the use is not for profit. Now, there is no educational exemption in the Copyright Act. That word is not used any place, but if you want to use material on a not-for-profit basis, this is possible for certain types of material under the terms of the statute. This provision particularly refers to literary material and music. This distinguishes educational television from commercial stations which do not have that exemption.

The original proposal of the Copyright Office was to retain this not-for-profit exemption. After panel sessions, at which there was strong, vociferous and prolonged opposition on the part of the music publishers, on the part of textbook publishers, on the part of other interested parties to the effect that this should be eliminated from the act, the proposal to delete the provision was made a part of the revision. The protestors asked: How can you as educators hold your head up in any kind of moral sense when you are cheating on the creators of this material and not paying for it? So the Copyright Office straddled the question. They said, if we present a revision of the Act to Congress, it will contain two alternative sections on this point: 1) in which it's retained; and 2) in which it is eliminated.

Literary material and music are definite terms in the Copyright Act. The term literary material does not apply to visual materials, of which a film is an example. The way the Copyright Act is drawn, this exemption which favors not-for-profit use by educational institutions does not extend to all types of material, but only to these two particular groups--all literary, written materials, and all music. All others, including visual materials are not so exempted. This fact prompts another argument. How come the copyright owner of a photograph can collect from you for its use, even though it's not-for-profit, while a composer can't?

No, a picture is not literary material, even though it's part of literary material. A picture is copyrighted under a special section of the Copyright Act as a picture, and therefore, does not come under the not-for-profit exemption.

Any material used that is other than literary material and music, even though it's a not-for-profit use, is an infringement of the copyright owner's right.

We have two kinds of motion pictures, photo plays and motion pictures other than photo plays. A photo play takes on the rights of a drama. A drama has peculiar rights in it. You cannot perform a drama publicly without the consent of the copyright owner, even though it's not-for-profit. When you perform a drama on a closed circuit, are you performing it publicly? That's the question I have to ask. In some of your closed circuit operations, it may not be public. Drama is the one exception that you might use on closed circuit. This exception does not pertain to other types of material.

This is a concept that was developed by the court in their judicial decisions interpreting the Copyright Act. The judges, over a good many years, came to the conclusion that certain types of limited use ought to be permitted in spite of the fact that a copyright right was given to the owner or publisher. This doctrine as set out in judicial decision is quite vague and probably desirably so. We have two problems in connection with it. First, certain individuals who want to codify this concept, that is, to put it in the form of a section in the Copyright Act. I have looked at this problem for quite a while, together with my associates, and we are opposed to such codification. The British Copyright Act was amended some years ago to put in a fair use provision. We checked with the British people about how it operated, and they said they liked it better when it wasn't in their Copyright Act. Now, since it's vague, there is a tendency on the part of individuals who have a special interest to try and direct it to their interest. The book publishers, more than others, would like to limit the right of fair use to quoting a hundred words or some such limitation as that. And they have proposed to the U. S. Copyright Office that such a provision be included in the revision. For example, all of these statements, "All Rights Reserved," "No Copying, Except for Review," "Quotations Limited to 100 Words," etc., are strictly extra-legal. The simplest rule of thumb to apply--this can get very complicated, but I will just give what you can use in your work--is to determine whether or not your use interferes with the sale of the original. That is, does it reduce the income? That's as good a guideline as any. That is, can they use your production as a substitute for original? That gives you wide leeway.

In the commercial music field, they have clearance agencies, at least three of them are operating PMI, ASCAP, and SESAC. The book publishers look with longing at what the composers and music publishers have, and they would like to have some such thing.

One of the troubles with clearing literary material is that it would take you forever. Each individual piece would have to get separate clearance. It's a nuisance. So a proposal has been made that the textbook publishers get together and form an ASCAP, that is, a clearing house where you could get clearance for the use of literary material. This, of course, would depend entirely on the elimination from the Act of the not-for-profit provision. They would like to reduce the opposition to revision by saying that they will provide a simplified method of clearance.

The copyright on any piece of writing protects only certain aspects of that writing. That is, it protects what we used to call, the literary form, not the idea. Ideas are not copyrightable. They are stealable any place. This is good for society. Everyone of us has borrowed ideas and elaborated on them, and this is what has made for progress. An idea should be free as a matter of public policy. The person who copyrights the expression of an idea copyrights only that form of expression. So to that extent any question or set of questions or test could not be protected against somebody else working on a somewhat similar test as long as he didn't copy the format.

The libraries have some serious problems growing out of the same technological developments with which you people are involved. That is, in the last ten or 15 years, we have seen the development of all kinds of copying and duplicating devices. Since the library seeks to service, it likes to give people copies of an article in The Saturday Evening Post, for instance, which has been copyrighted. This has been driving the publications insane, because the library can't do this legally. This is what the Copyright Act prohibits, and yet the libraries are continuing to make copies. I know of no suit that has been filed by a publisher against a library for making a copy for a client. But such suits have been threatened.

There's only one library in the country that won't make you a copy, the Library of Congress. This is due to the unholy alliance between the Copyright Office and the Library of Congress. This is another problem that affects you. You see the Library of Congress gets his acquisitions through the Copyright Office. It doesn't have money enough to buy books; it gets them by donations from anybody who wants to copyright. Well, this isn't too bad when you put out an edition of books and send two copies to the Copyright Office.

If you make a film of an educational program or a video tape, they want two copies. You must make two extra copies at a cost of $300 or $400, and send them to the Copyright Office.

At the present time if one creates a piece of statuary, it can be copyrighted without providing a copy but by providing a description. A film is the same type of artistic production. The Copyright Office ought to have an identification, but a copy should not be necessary.

REPORT ON COPYRIGHTS, CLEARANCES AND RIGHTS OF TEACHERS IN THE NEW EDUCATIONAL MEDIA

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REPORT ON COPYRIGHTS, CLEARANCES AND RIGHTS
OF TEACHERS IN THE NEW EDUCATIONAL MEDIA

PART IV--RECOMMENDATIONS

1. The rights of the owner of an educational program prepared for the new media appear to be adequately protected under the common law rules of copyright or literary property enforceable under state law. Programs may be rented or leased for restricted use without destroying the common law protection. However, if duplicate copies of the program are prepared for sale, the owner should proceed to comply with the formalities of the federal copyright statute to protect his interests from unauthorized use.

2. Full and unrestricted ownership of the educational programs prepared for the new media is normally vested in the institution or organization which initiates the program and pays for its production, and therefore any teacher or performer wishing to retain any aspects of control of a program should have a definite contract, agreement, or statement reserving appropriate rights for him.

3. The arrangement between an educational program producer and the teacher (either by direct contract, by reference to an adopted set of by-laws or policies, or by collective bargaining agreement) should cover the following:

a) initial compensation

b) right to re-use both within and outside the originating organization

c) compensation for re-use both within and outside the originating organization

d) the right to specify the life of the program or length of time within which it may be used

e) right to revise a part or all of a program or series of programs

f) right to withdraw the program based on termination of employment, death, reassignment, or obsolescence

4. Educational organizations with an interest in the new media should oppose the recommendation of the Copyright Office that the revision of the federal Copyright Act provide for the termination of common law copyrights when a work has been "publicly disseminated" in any of the following ways: (1) publication of copies, (2) registration, (3) public performance, or (4) public distribution of sound recordings. The adoption of such a definition of "publication" would require the formal statutory copyrighting of all educational programs prepared for the new media if the owner wished to protect his rights.

5. The present provisions of the federal Copyright Act permitting the use of non-dramatic literary materials and music in the production of not-for-profit educational programs without requiring clearance from the copyright owner should be retained in the statute. However, the recording provisions of Sec. 1(c) and Sec. 1(e) should be clarified to make certain that the not-for-profit use described above also permits the recording of these materials for not-for-profit purposes.

6. Organizations representing education in general should join with other organizations and institutions having special interests in the new educational media in the establishment of a Copyright Committee with the responsibility of developing legislative proposals for the revision of the present federal Copyright Act.

7. It is recommended that at some time in the near future a study be made of the methods of protecting educational programs for the new media in foreign countries so that international distribution can be facilitated. At the same time a study should be made of the existing restrictions on the use of educational materials _from_ foreign countries in the preparation of new programs.

Dear Sirs:

In consideration of my appearing on one or more television programs of the series entitled ______________________ and the fee paid therefor, I hereby authorize you to record on film, tape or otherwise, my name, likeness and performance and to use and to authorize others to use such recordings or films for educational television and radio broadcasting over stations throughout the world, for audio visual purposes and for general educational purposes in perpetuity. You may also use my name, likeness and biography for publicizing and promoting such broadcasts and other uses.

By ___________________________

Signature

Gentlemen:

In consideration of my appearance on the television program entitled ____.
I hereby authorize you to use and to record on kinescope my name, likeness and performance, and to authorize the
Public Schools to use such kinescope for educational television broadcasting in
or elsewhere for audio visual purposes in perpetuity. You may also use my name, likeness and biography for publicizing and promoting this telecast.

I also warrant and represent that to the best of my knowledge all materials used by me on the above named television program are my own or material which I have full authority to use for this purpose.

____

Witness:

____

PERMANENT WAIVER USED BY THE PUBLIC SCHOOLS FOR THE ASSIGNMENT OF TEACHERS' RIGHTS IN CONNECTION WITH PRODUCTION OF TELEVISION PROGRAMS

Assignment by the Teacher to the Board of Education

1. KNOW ALL MEN BY THESE PRESENTS, for and in consideration of the sum of One Dollar and in consideration of my employment as teacher by THE BOARD OF EDUCATION OF THE CITY OF I do hereby grant, assign and set over to THE BOARD OF EDUCATION OF THE CITY OF , all common law rights and/or all the copyrights and/or the right to secure copyright in the United States and all other countries of the world, (in the name of THE BOARD OF EDUCATION OF THE CITY OF or otherwise, in the Board's sole discretion), in and to a certain dramatic, literary, musical work, lectures or addresses written by me, including all right and title in the manuscript thereof and including also under such grant and assignment, without in any way limiting or restricting the same, the entire literary publication, novelization, dramatization, performing, mechanical reproduction, radio and other broadcasting, television and silent, sound, talking and musical motion picture rights therein for all countries of the world and in all languages, the exclusive right to the characters in such work, and any and all other rights of any nature that may hereafter be invented, discovered or come into existence.

2. I hereby grant, assign and set over to the BOARD forever all renewals of copyright and also the right to renew and secure renewals of copyright in all countries, in my name or the BOARD'S or otherwise in the BOARD'S sole discretion, in such work and in any and all versions made in pursuance hereof. This assignment is intended to cover work already prepared for Station -TV, and to be prepared for Station -TV, only while the assignor is in the employ of the

BOARD OF EDUCATION.

IN WITNESS WHEREOF, the undersigned has executed this assignment this day of 196 .

THE COSTS OF INSTRUCTIONAL TELEVISION

By
Leroy Hull, Director, Institutional Research
Indiana University, Bloomington

Much of the work of the NCA Subcommittee on Television has concerned itself with two major areas of endeavor. The first of these is the study, analysis and dissemination of information which relates to the effectiveness of television as an instructional tool. For many years, much of the research on ITV was designed to determine whether televised instruction was equal to live classroom instruction in its effectiveness in achieving educational goals. The Subcommittee quite properly has spent much of its efforts in disseminating the results of this research and providing information to its membership as to the effectiveness of the new medium. Today, there is no question but that televised instruction, when properly planned and presented, is equal to or in some cases superior to, traditional classroom teaching.

The second area of activity of the Subcommittee concerned itself with measurement. The census conducted by the Subcommittee attempted to determine where in the nineteen state area television was being used in education and how it was being used. The results of the census have been widely disseminated and have provided a valuable service to the membership in keeping them informed of the extent of television usage at all levels of education.

Throughout its history, the Subcommittee has encountered the query, "How much does it cost?" As school administrators became convinced of the value of the medium in helping them reallocate scarce instructional resources, the question came to be posed with greater frequency and more and more of a sense of urgency.

Thus, it is not surprising that recently a considerable portion of the Subcommittee's effort was directed toward the economics of television. Their first organized attempt to determine the costs of ITV in a systematic fashion occurred at a special planning meeting in Chicago in March, 1964. Representatives of ITV operations in both secondary and higher education were invited to the meeting to discuss the costs of providing televised instruction to students at their institutions. The general conclusion reached at that meeting was that the current methods of analyzing ITV costs varied greatly from one institution to another, that equipment being utilized had a great range in price, and that the problem of costing ITV was immensely more complicated than was originally thought. The case study approach to analyzing the costs of ITV foundered on the shoals of difference in definitions.

A different approach appeared to be in order, and in August of 1964 the Subcommittee invited another group of persons to a meeting at Columbus, Ohio, to approach the problem from a different perspective. At this meeting several significant features of the problems attendant to the analysis of the costs of ITV were discovered, and a strategy began to emerge.

Several distinctly different uses of television in education were discussed, and it was concluded that these could be separately identified and subjected to cost analysis. It was concluded that the persons most in need of information about the cost of ITV were the persons who would be making the decisions as to whether it should be utilized. These decision makers, it was posited, represent the most appropriate audience to receive information about the costs of ITV. It was also brought out at this meeting that the decision makers would be concerned not only with the initial costs of installing television for a specific purpose, but also with the costs of operating the medium and replacing obsolete or worn out equipment. Various cost factors for different uses of television were identified and the components of these costs categorized and listed.

Most importantly, for our purposes here, a schema was developed which the group felt might lend itself to further development as the most appropriate vehicle for disseminating information about ITV costs. It was decided that an ad hoc group would work to develop a model based upon this unit cost approach, and the model would be tested upon a group of collegiate business officers and ITV practitioners at a future date.

The schema described generally above was developed into a model of a cost manual for ITV and presented to a Seminar at Chicago in February, 1965. The purpose of this presentation was to test the model upon a representative group of leaders in higher education business administration and ITV to determine whether the approach proposed in the model was feasible. The Seminar participants concluded that the cost manual approach was a most promising development in attempting to provide cost figures for those who were planning to install or expand ITV programs.

It should be re-emphasized that this manual provides "guidelines" for the administrator. No document could attempt to provide exact cost figures for all conceivable kinds of installations. Equipment costs vary, both in quality of equipment performance and in manufacturers' pricing. The characteristics of available physical plant, the hours of use, the particular configuration of the installation and a myriad of other factors all contribute to make each installation peculiar to itself in cost of installation and operation.

What the manual does attempt to do, however, is to set forth typical cost figures for a number of different uses which the authors have found in operation. In addition, it provides a framework which the administrator can alter to fit the needs of his own institution. The manual provides cost elements or factors, which may be expanded or modified as mutually exclusive units, from which a cost estimate for the desired total installation may be derived.

It is hoped that this approach will help the administrator to determine the cost and to better determine the economic feasibility of various television uses in his institution.

USES OF TELEVISION

There are a variety of uses to which television may be put to profitable use in educational institutions. While it is proper to think of the instrument primarily for use in the teaching process, there are a number of other ways in which it contributes effectively to the total administration of the institution. The manual is so organized that the major kinds of uses which have been found in education are categorized and presented in separate sections to enhance the usefulness of the manual as a reference document.

MONITORING AND OBSERVATION

The first major section of the document provides cost information concerning a typical installation for use in monitoring and observation. While education has not made the extensive use of the medium for these particular purposes that business and industry have, there are innumerable possibilities for the replacement of expensive personnel or relatively inexpensive equipment to provide the same level or improved monitoring and observation of a variety of situations. A single inexpensive camera and monitor can be used at various times of the day or night in a number of different settings to provide service as it is needed. Monitoring of hallways, play areas, cafeterias, libraries, study halls can be accomplished with relative ease and can free scarce or expensive personnel for more important functions.

Observation of various educational processes has already been found extremely useful in education, and a wide variety of these uses are to be found in the manual. Observation by a relatively large group of students, teachers, or administrators of such events as a classroom in operation, a convocation which attracts an overflow crowd, counselling sessions, panel discussions, rehearsals for drama productions, and a host of other events have been found in use all over the country. There is virtually no limit to these uses which the imaginative educator will find appropriate to his institution.

Other observational uses, heretofore relatively unused in education but which intrigue the imagination, include the use of television for a variety of administrative purposes. The viewing of documents such as student records in far away places makes personnel records readily accessible to teachers and administrators throughout a school system. Administrators are well aware of the fact that the availability of documents determines the amount of their use, and extensive usage of such documents as personnel records, test scores, grades, etc., has long been the goal of all those interested in improving guidance and counselling services. Television offers an exciting challenge in achieving this goal.

Another use of television as an observational medium deserves further exploration. The bringing into the classroom setting of otherwise inaccessible objects such as paintings, archaeological objects, or geological specimens, to name but a few, expands the knowledge which can be made readily available to each student. Hazardous experiments which otherwise could not be performed but which can contribute greatly to the student's experience, or experiments which are too costly to duplicate at regular intervals can be observed by the students from a safe distance or made available to them time after time as they are needed.

Image magnification, the enlargement of objects through a microscopic technique, can provide better learning, particularly in the sciences. Through the eye of the television camera large numbers of students have "front row seats" to view growth processes, cellular structure, and intricate dissections which otherwise might need to be performed repeatedly for small groups of students. Here, too, these processes can be recorded and stored and used as many times as needed.

"LIVE" TEACHING

To most educators the most familiar use of television in education, and the one which has been more widely used than any other, is that of "live" teaching. No case needs to be made here for the advantages inherent in the possibility of expanding the range of master teachers or of improving the allocation of scarce human resources in a period of rising enrollments. Consequently, illustrations of the use of television for teaching regular classes receives an extensive coverage in the manual.

Not so well known, however, are other exciting possibilities in the teaching of additional students through the medium of television. Not only may the mere presence of the instructor be extended, but through the use of special equipment, demonstrations, image magnification, and visual material may also be introduced through the medium of television to improve the quality and efficiency of the instructional process. These augmented teaching aids are also covered.

ACQUISITIONED PROGRAMMING

In addition to the advantages apparent in the use of television in "live" teaching, the reader's attention is directed in this section to the opportunity to acquire and use, at the institution's convenience, quality programs which have already been prepared by the institution or by others and made available for distribution, frequently at quite moderate rates. Libraries of recorded instructional materials are building rapidly and becoming more readily available. They provide a valuable adjunct to the institution's own resources for they make available much of the best instructional material committed to recording by numerous highly qualified teachers over the nation as well as programmed information of a rare and valuable nature which otherwise would be unavailable as a teaching aid.

EXPANDED DISTRIBUTION SYSTEMS

One of the miracles of television is its capacity to transmit image and sound, not only to the next room or from floor to floor in the same building, but also from building to building, from one side of a city to another, from one city to another or throughout a state, a region, a nation, or internationally.

One southern state has complete television linkage to all of its public schools, so that a school in the most remote hamlet has access to material broadcast from the central studio.

This cost manual recognizes the inherent capabilities for expanded broadcasting and would provide several illustrations of how the medium can be extended throughout a school building, across a school system or throughout a state.

It becomes readily apparent that the uses of television in education described in the foregoing sections need not necessarily be mutually exclusive. The thoughtful administrator and the resourceful teacher will soon discover that the same equipment can be put to a number of uses other than the primary purpose which may have occasioned its original purchase. The reader should recognize that there are fringe benefits which attach themselves to the installation as originally conceived, and the institution can receive more value for the dollars invested than might be apparent.

THE COST MATRIX

The cost instrument is designed in such a way that the requirements for various kinds of installations are set forth on one axis, and the factors which create costs are set forth on the other axis. What is created, then, is a cost matrix, in which those elements which require dollar investments can be related to the requirements of the system. Such a schema introduces a principle of mutual exclusivity which permits modification of either axis without modification of the other. The instrument provides the advantage not only of setting forth typical installation costs but also permits the administrator to tailor his own installation to fit his particular purposes. (Preliminary drawing of cost matrix at the end of this report.)

For television communication to take place, three factors are essential: a picture, with or without sound, must be produced, the picture must be transmitted to some other place, and an image must be projected to the viewing audience. The instrument terms these processes, "functional requirements" and labels them respectively, "origination," "distribution," and "reception." Since it is frequently advantageous to record televised materials for subsequent and successive re-use, another category is added called "storage and replay." These functional requirements have been placed on the vertical axis of the cost matrix.

Having identified the functional requirements for any use of television in education, it is then possible to determine categories of cost which must be considered in installing and operating an installation. These categories of cost have been termed "cost factors" and constitute the horizontal axis which completes the cost matrix. Cost factors broadly identified and set forth in the cost instrument are physical plant, equipment and supplies, operating personnel, operation and maintenance, and program planning--personnel and materials preparation.

It is on this axis of the matrix that the greatest variation in requirements is to be found. A number of installations and uses, for example, will not require additional physical plant investments, expensive operating personnel, for funds to be set aside for graphics materials to be prepared, or for released time for teachers to prepare for use of the medium. More sophisticated uses of television, on the other hand, may require special space, trained technicians, graphics materials budgets, and teacher replacement to provide sufficient time to prepare televised lectures.

UNIT COSTS

This manual has adopted what might be termed the "unit cost" approach. While estimates of the total cost of the installations described and their operation and maintenance costs are provided, the cost factors themselves are presented as discrete units. Thus, cost estimates are provided for one camera, one monitor, one video tape recorder, conduit and coaxial cable per foot. This approach permits the administrator to determine his own needs as based upon his own environment and to construct an estimate based upon the configuration he sees as best fitted to his institution. This approach enables him to move from the costs as experienced by others to an adjustment of these costs upward or downward to fit his situation.

If a cost manual were developed from the model, it would also be appropriate to include a case study for each type of operation described. Such an approach would enable the administrator to visualize more clearly some of the benefits which might accrue from the installation. A glossary of terms would also be an appropriate addition to the manual.

The Subcommittee views the "cost manual" approach as a most promising one. The instrument received a favorable evaluation by the participants in the Seminar mentioned earlier and has received enthusiastic acclaim from other experts in the field who have been apprised of its development.

The task remaining to develop the instrument from the model stage to a useful working document is formidable--but not prohibitive. The schema needs to be "fleshed" by having a team (or teams) of cost analysts and experienced ITV personnel fill in the cost cells for each of the types of applications provided.

The Subcommittee expresses the hope that resources can be made available to complete its work in this vital area.

	COST FACTORS			
FUNCTIONAL REQUIREMENTS	**Physical Plant**	**Equipment & Supplies**	**Operating Personnel**	**Ope Mai**
Origination Picture & Sound				
Storage & Replay				
Distribution Picture & Sound				
Reception Picture & Sound				

Discussion:

COST FACTORS			
quipment & upplies	Operating Personnel	Operation & Maintenance	Program Planning-- Personnel & Materials Prep.

EDUCATIONAL PHILOSOPHY FOR THE FUTURE

By
Lester W. Nelson, Consultant, Instructional Division
National Association of Educational Broadcasters

The term, philosophy, may be defined in several ways, depending on the context within which it is used. For the purpose of my remarks, the most appropriate definition, it seems to me, is a system of principles for guidance in practical affairs. This definition has unique pertinence at this point for two reasons, first because the purpose of this conference is to identify and summarize the guiding principles which should command our educational priorities during the next decade and, second, because the educational decisions we make in our efforts to honor these principles must be practical and must lead to increasingly effective action.

The two criteria, practicality and effectiveness, though reflecting the art and the science of administration, can be neither practical nor effective, however, excepting as they also truly reflect the high, enduring purposes of the educational enterprise. It is eminently fitting, therefore, that we give initial attention to these enduring purposes of education.

It is well to remember always that, in a free society, education is properly and necessarily primarily concerned with the individual. This educational priority manifests itself in organized, systematic programs designed to develop the individual's intellectual powers, cultivate his skills, prepare him for some chosen vocation or profession, nurture his artistic sensitivities and creativity, discipline his moral will, assist him in achieving a genuine sense of personal worth and commit him to high purpose.

In our free society, even more than earlier societies, the individual does not live in isolation from society. The school, while ministering to the individual's well-being, must also contribute thereby to the strength and integrity of the social order, the neighborhood, the city, the state, the nation and, of course, to the whole of mankind. The character of society is determined by the effect which education has on the individual's attitudes and actions, the level of his skills, his motivation to be continuously a learner. These characteristics of the individual determine the essential character of society, its political integrity, its economic stability and prosperity, its general moral fiber.

Beyond these broad purposes, and not secondary to them in importance, the school is the principal determinant of the character and the quality of the national and the community culture. Upon the school, more than upon any other institution or function of society, rests the character of the world in which our generation lives and into which future generations will be born. What is well done in the classroom and laboratory or, perchance, left largely undone, profoundly affects the entire quality of personal and social life, the values by which man lives, the things we cherish most, the ends for which men strive. These are the critical differences between men whose lives are full and meaningful and those whose existence is empty and without essential meaning.

There is no question, therefore, that the decisions made by society importantly affecting the character and the quality of the schools, whether in matters of instruction, curriculum, personnel, organization, administration, utilization of resources, or social behavior and relationships, make a major difference not only in the lives of individual students but, also, in those subtle but sure ways through which influences permeate the social structure, in the whole life of society and its culture.

It cannot be over-emphasized that the primary purpose of our schools, of education, can be nothing less than the achievement of free persons in a free society. It is incumbent on society as a whole and, particularly on those to whom society entrusts the central task of education, that decisions affecting education be firmly tested against this major purpose. Any failure to do this represents a failure of education itself, indeed a double indictment of education, of which indictment, ignorance and indifference are the principal counts.

Beyond the two evaluative criteria of practicality and effectiveness to which reference has been made, what criteria of purpose should guide the decisions of those whose major function is education and making decisions so urgently required by a society now experiencing the agony of swift and relentless change and no less demanded by individuals caught up in such change? These changes, though well-known to this group, bear further reference, remorseless technological developments, human displacement caused by automation, a newly awakened and freshened national conscience concerning equality of opportunity, the burgeoning problems of a rapidly expanding population, the incredible increments in human knowledge, the fantastic efforts to explore and to conquer space, the unstable and unpredictable forces affecting relationships between races, peoples and nations.

In consideration of these vast changes now occurring at an accelerated pace, five criteria are suggested as mandatory in making our educational decisions. Stated in simplest terms, these are:

1. Improving the quality of individual learning and extending the range of that learning.

2. Broadening the equality of learning opportunity for all individuals.

3. Modifications in the institutional arrangements of education designed to encourage and support educational change.

4. Strengthening individual motivation for continued learning and providing more immediate and assured rewards for current learning.

5. More imaginative and vigorous efforts in education to utilize the resources of time, talent and technology to their full potential.

These five criteria focus on five counterpart elements of the educational purpose--quality, equality, change, continuity, utilization. Three of them emphasize the priority importance of the individual; two of them relate directly to our educational and institutional posture and practice.

In the time remaining to me, my further remarks will be addressed to each of the five suggested criteria in turn.

Improving the Quality and Extending the Range of Individual Learning. Certainly there is neither novelty nor dramatic import in this criterion. Educators have been engaged in such efforts throughout our history. The automatic and tacit acceptance of this purpose merely serves to underscore its importance and attest to its priority.

Two contemporaneous forces in our society, ample evidence of which may be observed in this country and around the world, furnish timely reason for intensified commitment to these efforts as, indeed, they afford poignancy for our failures in such efforts. If, as I have indicated, the quality of our social, political and economic life is determined primarily by the quality of individual perceptions and attitudes, we cannot stand aside as spectators in a passive and non-responsible posture in the face of these forces. I refer, of course, to the continuing sharp rise in the incidence of crime in our country and to the massive threat to law and order which equally massive demonstrations of protest against real or fancied injustices involve. It is crystal clear that, in both areas, American youth not only constitute the majority of participants in such manifestations but, of even greater significance, they also provide major leadership for them.

Although the right of protest is an inalienable right of individuals and of groups under constitutional guarantees, and the unique contributions of youth to such protests a matter of historic record, it is also true that the right of protest and the exercise of that right must be subject to the requirements of law and order and, ultimately, of individual self-restraint. When the quality of self-restraint does not exist, the individual is not a free person nor, indeed, is a free society possible. In these fundamental terms, the quality of individual learning is not to be assessed in terms of amounts of knowledge or level of specific skills but, rather, in terms of the insights, understandings, attitudes and actions of the individual. This, it seems to me, is the highest meaning of quality in education and it is against this test that we must assess our educational effectiveness.

Extending the range of individual learning, as a counterpart of efforts to improve quality, becomes much more than a function of time or the numbers of courses, credits or degrees the individual acquires. It is suggested that the dimensions within which learning must be extended relate much more to the areas of the arts, humanities, the social and behavioral sciences than to the areas of the physical sciences, mathematics and technology to which, in recent years, we have given such increased attention. Lest I be misunderstood here, it is critically important that we avoid a disastrous dichotomy between the arts, humanities, the social and behavioral sciences, on the one hand, and the physical sciences, mathematics and technology, on the other hand. Certainly both have their unique contributions to make and should be regarded as complementary to each other in our educational endeavor rather than merely mutually supplementary of each other.

Specifically, there is a critical need to redress existing imbalances in the curriculum and efforts addressed to this end manifestly must give greatly increased attention to such fields as economics, anthropology, political science, sociology, the arts and the humanities.

Time does not permit further elaboration of this viewpoint but, in brief summary, it may be said that the future vitality and good health of our free society is extremely questionable unless the quality of individual perceptions and attitudes is raised and the range of these perceptions is broadened.

Broadening the Equality of Learning Opportunity. Here, again, efforts to achieve equality of educational opportunity for all has been a persistent one in our American educational enterprise. How far short of achieving this goal we have reached may be a matter of differing opinions but, again, in the face of existing facts and forces, it is clear that major efforts in this direction must be mounted.

Although major public attention has been focused on those inequities whose incidence may be most commonly observed within certain ethnic groups in our society, the critical locus of which is to be found in our major cities, efforts at remediation which concentrate solely on this facet of inequity ignore the broader human needs of our times. As one whose predominant professional experience has been gained largely in those communities which Harold Gores has called "the Brahmin communities," it is a matter of personal testimony that equally critical inequities may be found also in suburbia. Flight from the realities of urban congestion and blight, together with a determined attitude of insulation against such realities, have tended to blind the refugees to these realities and, in fact, to establish "enclaves of isolation" within which self-protection has been sought.

It must be evident that growth of population, increasing mobility of families and of individuals, changes which are transforming our society from an industrial economy to a service-oriented economy, are all tending to increase the social, economic, cultural and political heterogeneity of most American communities. I dare say that practically every person here present can attest to such changes in his own community. In a newer and even more critical sense, the term "melting pot" has achieved a new significance, in which immigration as a basic force has been replaced by simple migration or mobility.

At the local community level, this increasing heterogeneity confronts many schools and faculties with problems essentially new to their experience, problems of curriculum, methodology, organization, professional insights and competences they have not had to confront formerly. At the state and national levels, it confronts us with large matters of public policy concerning education of which pre-school and kindergarten programs, scholarship assistance, vocational and technical education, community colleges and others are given as examples. Furthermore, public policy with respect to educational financing and the respective roles of local, state and federal authority in such financing, has been undergoing major change and is destined to see still more change.

During the active professional lifetimes of those here present, we have witnessed an "about face" in attitudes toward federal aid to education and I dare say my own confession of change in position does not find me alone in this company. Similarly, on many matters of local institutional organization and arrangements, including the role of the school in general community life, have also changed substantially. There exists a major issue in education which, as I see it, has not yet been truly recognized as such. It is the issue of the school's role in our society. This issue, in its simplest form, may be seen in the deeply held beliefs of those who see the unique role of the school as the advancement of intellectual inquiry, of learning and of those who see this unique role as one of remaking the social order. This issue has not reached the point of intellectual confrontation as yet but it may be seen in increasingly acute form in the civil rights and school integration conflicts, particularly in our major cities.

The equality of educational opportunity, viewed in the context of the preceding remarks, becomes more--much more--than a matter of internal organization of the individual school, together with shifts and shuffles in existing curriculums and changes in instructional placements. Endless refinements in these areas, important as they are, really do not touch the central core of the problem unless they are taken in conjunction with broad changes in public policy and public attitudes.

Again, in brief summary, equality of educational opportunity is unlikely to be significantly advanced excepting as public policy changes lay the broad base for improvement and local community attitudes and actions give true meaning to the effort. In essence, state or national support for such efforts as Operation Headstart, for example, are sure to be abortive unless local attitudes and commitment give them reality.

Modifications in Institutional Arrangements Designed to Encourage and Support Change. Brevity of remarks concerning institutional change is warranted, I believe, because so much is in process at the present time that one believes this necessity is well understood within educational ranks today. Two comments, however, are appropriate.

First, learning does not occur for the individual unless change in the individual occurs. These changes may be evidenced by increased knowledge, higher levels of skill, deepened insights, broader perceptions or improved taste, and others. If change has not occurred in the individual, learning has not taken place and teaching has been barren of results. Learning is a dynamic process and static institutional attitudes or practices may not be regarded as hospitable to the dynamic process of learning whose constant characteristic is change, in support of which we commit our best professional efforts. Institutional change is a positive virtue, in the absence of which education cannot be advanced.

Second, educational change is characteristically prudential in its pace and pattern and demonstrable improvements of change are characteristically slow to permeate the whole of educational practice. It is suggested that the embracement of change in institutional arrangements needs to be undertaken on a more comprehensive basis than is normally the case. Typically, we undertake to effect change in only one of the institutional variables at a time, determining for purposes of alleged evaluation or research, to maintain all the other variables so nearly constant as possible. Thus, we make changes in curriculum, organization of instructional groupings, daily schedules, use of resources or teaching methodology, one at a time, but almost never do we deliberately recognize the spiderweb nature of the institution which, when one strand of the web is shaken, finds the entire web shaken. This limited and often tentative commitment to change robs it of its unique developmental significance. We know the impossibility of maintaining any inherently variable force as a constant, excepting within broad limits, and the efforts given to such enterprise might much better be given to reaping the developmental advantages of more comprehensive attacks.

The modern classical example of what has just been said is to be found in the in-school use of instructional television, or, if you prefer, educational television. It becomes immediately clear that the use of television as a regular part of the instructional program forces changes in practically every facet of the school's operations, scheduling, curriculum materials, teacher roles, instructional methodologies, use of space, testing procedures, etc. It is precisely this inherent and inescapable characteristic of television that constitutes a major virtue, even as in the minds and attitudes of many in our profession it represents the most controlling reason for not using television. Other examples are abundantly available, team teaching, programmed instruction, ungraded organization, and others.

In my opinion, television though not the only entree to effecting desirable educational change, is probably the most certain and the most effective approach to this end. I shall have some concluding comments concerning television but, as an illustration of what is intended in these remarks about encouraging institutional change, it is uniquely pertinent at this point.

Strengthening Individual Motivation for Continued Learning and Providing More Immediate and Assured Rewards for Current Learning. The problem of motivation is well known to every teacher and failure to achieve motivation in students is probably the source of more teacher frustrations than all other causes combined. Were we to know surely how best to achieve lasting motivation in students, most of our educational problems of quality and equality of opportunity would be solved. Unhappily, we have not reached such a happy state and, yet, the enduring relevance of motivation to all our plans and efforts persists. Indeed, the alleged lack of motivation among those whom we call the "disadvantaged" or the "deprived" individuals in our society is most often cited as the prime source of continued deprivation.

The importance of achieving lasting motivation in the individual has been starkly revealed in many of the current events taking place on the national scene. Its intensification as a goal to attain is, in part, a function of technological advance and changes in employment opportunities and employment patterns, and in part, a function of concentration of those alleged to lack it. These forces in our society are unlikely to yield to our best efforts either easily or quickly, despite much current emphasis on it.

It seems likely that two types of effort, the beginnings of which we are now witnessing, will demonstrate their promise of substantial effectiveness and are destined to play a major role in the years ahead. I refer to the trickle of effort, now given national encouragement and assistance, to develop pre-school educational programs, and efforts to find useful and gainful employment opportunities for those who have achieved levels of skill which justify such employment. A few words about each of these kinds of effort.

Whatever may have been the reason for placing the beginning of organized learning experience on a chronological-age basis, and however justified this may have been, readiness and eagerness to learn is not a function of any fixed chronological age in any substantial group of individuals. The scientific evidence on this point clearly supports the observations we all have made in experience. Delay in providing organized opportunities for systematic learning, beyond the time when the individual is prepared and eager for such learning, seems to be a major point of beginning for low motivation. It may be dramatic to say that our educational practice of a uniform school entering age results in making the satisfaction of intellectual curiosity illegal for many individuals but, for these same individuals the results of such denial are truly traumatic. It is suggested that, despite the problems attendant on lowering the age at which organized learning begins, this avenue to better attacks on motivation is destined to find increasing support, and deservedly so. The problem is not solely one of developing motivation but, rather, one of legalizing the satisfaction of motivation already existing.

Earlier reference has been made to the changes taking place in our society which reflect an accelerating pace of economic transformation from a predominantly industrialized economy to a service-oriented economy. Although most recent Bureau of Labor Statistics figures show industrial employment to be at an all-time national high, the same figures indicate the percentage of those involved in providing services as compared with those engaged in producing things, continues to advance and that the proportional balance between service employment and industrial employment stands at 53% (service) and 47% (industrial).

It is believed that this mainstream change in employment patterns and manpower requirements offers new and relatively unexplored opportunities for absorbing increasing numbers of presently unemployed youth into the productive life of the nation. Crime and civil disobedience are not unrelated to the frustrations accompanying idleness but, more importantly, to the lack of believable probability of employment. The awakening conscience of our people respecting the relevance of employment and ultimate economic freedom to the free man and a free society, though belated in its expression, is a hopeful omen for the future. Although schools and colleges, education as a whole, cannot undertake to carry the burden of both architect and engineer in such efforts, it must assume a larger and more vigorous role in such efforts.

Once more, in brief summary, more effective means for developing and sustaining individual motivation for continued learning must be found and, to that end, it is suggested that two levels of attack hold promise, the change in time of beginning of organized, systematic learning experience and the development of programs offering more immediate and assured employment opportunities for youth. In a society of fantastic affluence and increasingly moving toward a service-oriented economy, both these possibilities are promising and deserve our serious attention.

More Imaginative and Vigorous Efforts to Utilize the Resources of Time, Talent and Technology to Their Full Potential. It has been less than a decade since a general session program of the National Association of Secondary School Principals at its annual convention in St. Louis, a program devoted to the concepts and practices of talent utilization, was greeted by general skepticism, substantial reservation and even open hostility. Happily, though the battle for better utilization is still with us, the tendency to regard utilization of professional talent as synonymous with exploitation of individuals has all but disappeared. This is, in its own unique fashion, a measure of the increasing professionalization of teachers and of teaching.

I mention the foregoing experience because of its relevance as well as its promise. There is no need here to labor the matter of relevance or to advance the arguments of potential promise. Rather, it becomes pertinent only to observe that, during the past decade in particular, the basic concept of utilization has been broadened and better understanding of it exists. This is clearly exemplified in many ways, year-round educational programs, longer day-time accessibility to students of the facilities and resources of the schools, flexible scheduling of facilities, students and professional personnel to increase the time span during which instruction is available, the trimester arrangements in increasing numbers of colleges and universities, and many other kinds of effort to use time to better and fuller advantage. With respect to the better utilization of talent, team teaching, use of readers, school aides or teacher aides, internships, ungraded organizations, these merely touch some of the more significant and promising efforts we see all around us. Even more dramatic, perhaps, have been the efforts of schools and colleges to utilize technological resources in the instructional process, the institutional operations, the assessment of learning progress, the collation, codification, storage and retrieval of data, and many others. In this continuing effort to utilize our modern technologies we have seen the advent of instructional television (now a bare decade old), of computers, video tape, large-scale programming, a host of servo-mechanical, electronic and optical developments and, yes, we have also witnessed the broader use of an older technology, radio. If one pauses to reflect on these developments within the spectrum of time, it may be close to the truth to say that more daily instructional use is now being made of these modern technologies than we make of newspapers and that it is almost as common to see a classroom with a television receiver as to see one with a daily newspaper.

Encouraging as these developments may be, no audience that could be assembled would be more prepared than this one to admit the shortcomings in our perceptions and the limitations of our existing skills with respect to the resource of technology and of television, in particular, nor more impatient to get ahead with the task of better utilization of these resources. This brings me to my threatened, and concluding remarks.

Some Unfinished Assignments for the Next Decade. Under this rubric, it must not be assumed that any of these suggested assignments for television can, or will, be "finished," but at least we have the opportunity and must employ our most imaginative efforts to get on with them.

1. We must achieve a major change in perception of those who reject television as a major resource, because they see it primarily as a source of problems rather than as a resource for solving many of the most persistent problems in education.

2. We must replace the all-too-common perception of television as a mass medium, appropriate only for mass instruction of mass groups, with the more accurate and educationally significant perception of television as a way to individualize instruction.

3. We must develop more believable and practical ways, patterns or procedures to capitalize on the potential of television for individualization of instruction.

4. We must refashion the institutional arrangements and procedures of our schools in such ways as will make it possible to use television selectively, persistently, centrally in instruction rather than compel its use at the lowest common denominator of potential, that is, on a basis of existing institutional convenience.

5. We must not demean other modern technological resources which the schools are also trying to use productively by establishing a technological hierarchy of which television is the universal star performer.

6. We must explore, devise and, if necessary, invent ways for flexibly melding the use of television into such developments as team teaching and the ungraded school.

7. We must devote increased time and resources to find better ways to use television in continuing education for the individual and to re-enforce and extend learning at home, outside the school, already begun in the school.

8. In our desire to realize the fuller potential of television, our efforts to do so must not be allowed to degenerate into a fixed pattern of utilization. To do this will be only to institutionalize television and make it subject to the same deserved strictures that beset other and older institutions.

9. Finally, and of greatest importance, we must continue our efforts to insure excellence in programming. Lacking this standard of performance, television has no inherent virtue for claims on educational use beyond that of logistics. This is not nearly enough to justify the effort or to realize its unique potential.

I began by referring to the five counterpart elements of educational purpose which must underlie our educational philosophy for the future, namely, quality, equality, change, continuity and utilization. Television has already demonstrated its potential for contributing to each of these purposes. It is suggested that the task now confronting educational television is not so much demonstration of the potential but the realization of that potential.

VIEWPOINT ON EDUCATIONAL TELEVISION--SMALL HIGH SCHOOL

By
Henry C. Dial, Principal
Carlisle High School, Carlisle, Arkansas

I am going to express what I have learned, as an administrator of a small school, about educational television and how it can affect small schools. Most of the conclusions are my own, others might disagree, but I believe that educational TV is a solution to many of our problems.

Although it is not a panacea, it gives an opportunity to enrich our instructional program. I would like to emphasize that the opportunity is here and we must not wait for the larger schools to implement educational TV. We must take the initiative and also the necessary research and planning for use in the small school. As of now, I rely on the larger schools for in-service programs, then spend hours improvising for use in our schools. This is not a weakness but we must share this responsibility.

What per cent of all schools do I represent? As related in the Ford Foundation summary:

> "More than 25,000 of the 125,000 public schools in the United States are one-teacher schools. One of every six high schools has fewer than 100 students."[1]

I would venture to say that four out of every six high schools have fewer than 500 students.

In some areas consolidation is a must, but we cannot wait; we must act now in meeting the needs of our students. We must use our imagination and other resources in meeting these needs. Educational TV will give us increased impetus in broadening and enriching our curriculum as will other aids.

The problems of small schools are basically the same as larger schools; such as lack of finances, limitation of curriculum, inadequate in-service programs for teachers, poor relationship of school and community, lack of cultural opportunities, and many others.

Can educational TV become a reality in the small school? This question was answered somewhat when Congress passed the Elementary and Secondary Act of 1965. We have been able to buy the shoestrings but unfortunately not the shoes. In my own state of Arkansas, the General Assembly recently appropriated state funds for educational TV. The small schools will not reap the full potential for instructional TV unless they can share with one another. The real benefit will come when the program can be more flexible. By this I mean the use of closed circuit TV. The cost of closed circuit TV is forbidden for one small school to finance. I suggest we organize several small schools in our area for this purpose.

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[1] "Changing Times," The Kiplinger Magazine, February, 1963.

The cost of equipping a school depends on several factors. Is the building wired for television? How many receivers will be installed? What makes and models will be purchased? How far is the school from the studio?

As reported by the Midwest Program on Airborne Television Instruction, the cost would range between $250 and $600 per room.[2]

The majority of small schools, through wise use of local money and matching funds, are in a position to finance this type of program.

As previously stated, I hope we in the small school can form a closed circuit network giving us more flexibility in arranging time schedules for courses. The closed circuit would enable us to use our own teachers. I believe that this will also improve the effectiveness of our teachers.

Even with money being available, will the local school board be willing to spend the amount needed to install educational TV? Educational TV is no panacea, yet many outstanding claims have been made in its behalf by prominent educators. For instance, Public Law 87-447 in appropriating matching funds from the federal government states:

> "Educational television promises the first fundamental advance in instruction since the invention of the printing press 500 years ago."

Dr. Thomas Clark Pollock of New York University says:

> "It now seems clear that TV offers the greatest advancement of education since the introduction of printing by movable type."

It is clear that there will be matching funds from the federal government provided the local boards can understand the need of TV. It is not easy for small conventional type schools to suddenly spend the amount of money needed to install "picture boxes." The need is here and I hope we, as administrators, can give the type of leadership that is needed for installation of instructional television.

Second, the spinal cord of any school is the curriculum. The cry from many schools has been the lack of personnel to teach courses such as physics, chemistry, foreign languages, etc. A quote such as the following is in essence the reason for slow curriculum advancement in the small school:

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[2] "This is Airborne," Memorial Center, Purdue University, MPATI.

> "Certain programs such as foreign languages, because of lack of trained personnel to teach it, is a very good example for instructional TV until qualified people man the classroom."[3]

We are faced each year with the problem of finding teachers for subjects such as math, chemistry, physics, and foreign languages. In most small schools even if we find a qualified teacher, there is still the problem of various subjects he must also teach. We try to limit the number of preparations to three, but after preparing for chemistry, there is little time for the other subjects. Too often, the junior high students are neglected. Remember, they will eventually be taking chemistry.

It is not too impossible to expand many curricula in small schools with problems related to inadequate facilities or personnel. We are experimenting in our school with independent study in the following courses: advanced English, advanced history, and mechanical drawing. Wouldn't it be marvelous if instructional TV were available to supplement these courses?

As reported by the Ohio Television Study Commission, enrichment material for standard subjects: history, foreign language, math, English and the sciences would add significance and reinforcement to regular teachers.[4]

In Alabama, full courses in Spanish, French, Russian, chemistry, biology, physics, history, and civics, are being provided to students in all schools. How many small schools can present their students with this type of offering? In view of the fact that we need 10% more qualified teachers, this seems hardly a reality.[5]

Third, the teacher in the small school has never before been faced with as many rapid changes in techniques, knowledges, and pupil needs. Due to lack of funds for salaries, it has been, and will continue to be, a hardship for us to obtain qualified teachers in all subject areas. In a recent report by the Arkansas State Department of Education, there were only 39% of science teachers qualified to teach science in the state. I believe instructional TV can very well supplement these teachers and we should work toward obtaining this help for them. I do not mean that these teachers will be replaced. I firmly believe that in the small school, as well as in larger schools, we should continue to keep the ratio of 1:25 teacher-pupil ratio.

One of the South Carolina Commission policies is as follows:

> "The closest possible relationship between TV and classroom teachers will be stressed. There will be a classroom teacher in every class. Supplied several days in advance with script outlines of the TV teachers' subject matter, the classroom teachers will have the

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[3] Final Report of Colorado ETV Commission, 1963-64.

[4] Report of the Ohio Interim Education Television Study Commission, February 15, 1961.

[5] "Helping Hand for Tomorrow's Teachers," Scene, May, 1964.

> opportunity and responsibility of coordinating and elaborating in the follow-up period on each subject, answering questions, observing discipline, counseling, testing, and otherwise maintaining the vital teacher-pupil relationship which now prevails."

We are vitally in need of more in-service training for teachers. This is a problem and will continue to be for the next ten years, unless we take definite steps toward correcting this deficiency. I believe that educational TV will give us more opportunities for in-service training. In the small school, we have been so busy keeping up with the explosion of knowledge, that techniques of teaching has been neglected. The development of TV will bring increased need for workshops, seminars, and involvement of teachers. Every teacher should have the opportunity to perform in front of a camera.

Teachers will have an opportunity to observe the use of new equipment. Many teachers today are not aware of the various teaching aids available to them.

Teachers will be more informed about research in education. I quote a principal in Texas, "Teachers are being stimulated to further research in the various subjects."

Fourth, the relationship of the school-community is an important facet of the education system in the small school. Basically, the patrons of the small school will resist changes. This is a problem in curriculum and in the financing of teachers salaries, construction and new visual aids for teaching. I have found, however, that if they are informed concerning changes in curriculum, they will accept the change. In most small schools the media of communication is inadequate. I believe through open broadcast of educational TV, the patrons will even demand more for their dollar. It is jokingly said, the authority in our school is a resource individual that lives at least 30 miles from our town. The patrons will be able to see the various programs of others, and seeing with the eye is worth a thousand words.

The involvement of school board members in panel discussions on educational TV will bring about better leadership from local boards.

I believe parents will be better informed on study habits, materials presented in classes, the services of the guidance counselor, content of library and many other services that would improve the equality of education for their children. A more informed community means a better education for the children.

Fifth, I would like to briefly state a service that is needed and that is adult education. In most small schools, one to two classes for adults are taught each year. As the average education for most adults is the eighth grade, it is important that adult education be broadened in small communities. Not only will this improve the education of the adults, but in turn help the children. I believe educational television has much potential in providing courses in reading, spelling, and many other areas in the small schools.

In conclusion, I know that the problems of limited finance, narrow curriculum, limited number of qualified teachers, relationship of school-community, and limited adult education are not isolated from other schools, but they are acute with the small schools. As stated by Dr. Thomas Summer,

> "As with any aid to education, TV simply helps people to help themselves. We must organize to help each other and the major emphasis in education will always be for better education for our children."

To summarize the small school for the need of educational TV, "even the best teachers in small schools cannot teach all subjects well, often some subjects are not taught at all. Reaching into the most isolated school, educational TV insures that thousands of students are not deprived of essential subjects."

From a UPI release, I quote, "About 900 inmates of the Colorado State Penitentiary held a sit down strike demanding, among other things, educational television in their cells." Let us not be less alert than those inmates.

TELEVISION AND THE MODERATE SIZED SECONDARY SCHOOL

By
Glenn E. Knight, Principal
Auburn High School, Auburn, Nebraska

I would like to preface my remarks with a short explanation of the statewide educational television system that is currently taking form in Nebraska. During the 1963 session, the Nebraska Legislature appropriated money and established a television commission charged with the responsibility of establishing an educational network of seven channels throughout the state. At the present time one UHF and two VHF channels are or are about to go into operation. These three stations give a coverage which reaches better than two-thirds of the state's school population. When completed, the network will give coverage to the entire state.

The Nebraska Council for Educational Television, Inc., is a non-profit corporation made up of the member schools of the state who use the television offerings of the Council in their school programs. This is an assessment operation with member schools paying costs of programming on a per pupil assessment. The Council has grown from six member schools serving approximately 4,000 students in 1960, to about 85 member schools for the coming year 1965-66. Members this year range in size from schools numbering nine students, to a large system numbering 30,000 students. This year the Council will service in excess of 100,000 students.

In December of 1963, the Council began giving serious consideration to programming at the secondary level. This was an attempt to use television as one means of improving instruction in the secondary schools of Nebraska.

With the above as a background, our task then is to examine the place of television instruction in medium sized secondary schools and to project for a period of ten years, the impact that television might have upon this size school.

There are few educational leaders who any longer question that educational television can be of great value in improving the quality of instruction at all levels. Its success to date has been noted particularly at the elementary and college levels.

As a point of reference, let us begin by making three assumptions: (1) Educational television can improve the quality of instruction. (2) Educational television can help to expand the trend toward differentiated, individualized instruction. (3) Educational television can, when desirable, expand the curricular offerings. If one cannot accept the above, the alternative is to abandon educational television at the secondary level and move on to the exploration of other systems and designs that seem to offer more promising solutions to these problems.

Improvement of instruction within the school is a never-ending task. Television should play its role by bringing to the classroom specialists who can effectively form a working team with the regular classroom teacher. The specialist brings to the classroom experiences that are not possible in the usual classroom situation, thereby giving breadth and depth to the total instruction within that class. The concept of total teaching by television should in most instances be abandoned and be replaced by the team concept with emphasis upon the classroom teacher as the leader of that team.

The inclusion of a superior teaching specialist within the classroom should stimulate the classroom teacher to improve instruction much the same as a visitation to another school for observational purposes might. It must be constantly stressed that the television specialist is an expert in planned preparation and that the classroom teacher must become the expert in utilization.

Further assistance in the improvement of instruction in the local school situation might be forthcoming from area wide in-service telecasts directed toward improving teacher competency in subject matter areas. This, and the communicating of the latest developments in curriculum and methodology could become a very meaningful service of the state departments of education or state colleges and universities.

We in secondary education have long enough paid lip service to individual needs of students and to differentiated curricular offerings to fill these needs. The coupling of television instruction with large and small group instruction should provide a means of helping to overcome this obstacle.

A large stumbling block observed in the past has been the reluctance of secondary teachers to incorporate television into their total instructional scheme. There would appear to be several facets to this problem. The classroom teachers may consider themselves subject matter specialists and resent the intrusion of the television specialist into their classroom. They may feel inadequate because of a lack of formal or informal preparation in the uses of the newer media. They may feel threatened because they do not understand their real role in relation to the studio teacher. Or, the concept of the teaching team has not been clearly defined.

It becomes the task of the administrator to identify these disrupting feelings of the classroom teacher and to make available whatever support is necessary for the teacher's success. Pre-service and in-service training in large amounts should provide a major assist in overcoming these difficulties.

An equally large stumbling block to utilization of open circuit educational television as a means of individualizing instruction is the scheduling of the programming of the telelessons. Three alternatives suggest themselves. First, the repeating of the telecasts by the originating agency several times each day or week to facilitate the matching of the telecasts to the formal schedule of the school. This results almost automatically in the television instruction dictating not only the opening and closing times of schools but, more seriously, the dictation of the placement of subjects and teacher assignments within the schedule. Few schools demonstrate any eagerness for this type of dictation. Second, the modification of the total school schedule to accommodate large and small group instruction directing the telecasting to large groups under the direction of one teacher freeing any remaining teachers in that subject area for individual or small group work with students not occupied with viewing the telecasts. The difficulty of this scheme for schools of moderate size is that there are few specific subjects with more than one or at most two teachers. Third, and the alternative which seems most likely to lend itself to reasonable application by moderate sized schools, is a combination of the first two plus an assist from technology. Using a video tape recorder to record programs, and large screen receivers, it should be possible to replay over a closed circuit system within the building, programs at the time most appropriate to the total instructional endeavor. Coupled with a modular scheduling system, large group television instruction could be wedded to individual and small group learning situations in a way which should do more than pay lip service to individual needs and a differentiated curriculum. It must be reported here that the larger member schools within the Nebraska Council for Educational Television, Inc., have abandoned large group instruction which required the use of several regular sized receivers.

Present physical facilities and financing of the necessary equipment to accomplish such an endeavor immediately became pressing problems in most schools. Few school plants have facilities which lend themselves to satisfactory large group instruction. Modification of older structures becomes quite expensive.

The development of a reasonably priced video tape recorder which will produce quality reproductions along with large screen receivers of quality seems a must. However, I have no doubt that these technical problems will be solved before most educators are ready to utilize these advances.

A further service that educational television might bring to schools of moderate size is the capability of expanding the curricular offerings in order to expand the educational opportunities of the students.

In many instances, schools of this size do not offer or at best offer little in such areas as arts and crafts, health and safety and remedial reading. Whether because of financial problems or the lack of fully trained staff or both, television instruction might well fill a glaring need in such subject matter areas.

Further, the use of television might well make possible the expansion of foreign language offerings as the local situation might indicate. A third or fourth year offering or the introduction of a second foreign language offering seems entirely feasible.

In projecting the uses of television in moderate sized secondary schools for the next decade, we might speculate that:

1. While practically all students will experience some television instruction, we will more fully be able to realize that television's proper place in the instructional scheme is only one part of the answer to improved, effective teaching.

2. The concept of developing a teaching team composed of the television specialist and the classroom teacher should result in a restructuring of the school schedule to include large and small group instruction.

3. Present school facilities will be re-examined and remodeled to better utilize the newer instructional media and methods.

4. Experimentation will continue making possible the development of plans which best fit each local situation.

5. Television will be recognized as an effective agent in implementing a productive in-service program for teachers at the local level. This in-service telecasting must go beyond subject matter and deal with major educational problems.

In conclusion, returning to an earlier statement, educational television can be of great value in improving instruction at all levels--if we have the creativity and imagination to use it wisely.

FUTURE NEEDS AND PROBLEMS OF THE LARGE CITY SECONDARY SCHOOLS

By
Harold S. Vincent, Superintendent
Milwaukee Public Schools, Milwaukee, Wisconsin

My specific assignment on this program is scheduled to cover approximately twenty minutes. In this period of time I am supposed to suggest what I think the major needs and problems of the large city secondary schools will be over the next ten years. I have also been asked to indicate what I believe the role of educational television will be in meeting these needs and problems. Although this appears to be an almost impossible task, I shall, nevertheless, do my best to meet the specifications of this assignment.

As a basic premise, I think we would all agree that the next ten years will be characterized by a constantly increasing recognition of the importance of education to our national welfare. Let me place in evidence two statements--one, frequently quoted, by Alfred North Whitehead written nearly forty years ago, and another taken from the Annual Report of the Ford Foundation for 1959.

Whitehead writes: "In the conditions of modern life, this rule is absolute. The race that does not value trained intelligence is doomed. Not all your heroism, not all your social charm, not all your wit, not all your victories on land or sea can move back the finger of fate. Today, we maintain ourselves. Tomorrow science will have moved forward yet one more step and there will be no appeal from the judgment which will then be pronounced on the uneducated."

In the 1959 Report of the Ford Foundation this statement appears: "The destiny of our nation depends on the degree to which our people comprehend two central facts of our time: (1) that education is now the indispensable medium for survival and progress, and (2) that a nation's commitment to education consists of infinitely more than remedies to problems of formal education like bulging enrollments, curriculum upheavals and other crises of the moment or year. The wave of concern about problems of education has been mounting for more than a decade. It could grow into a strong tide carrying American civilization to new levels of maturity, wisdom and utility, or it could diminish into a ripple of indifference and complacency leading to a static society or worse."

Notwithstanding this sense of urgency, there seems to be evidence that trouble is in the offing for secondary education. For those of you who have not read it, I recommend the February, 1965 Bulletin of the National Association of Secondary Principals entitled, "The Coming Crisis in Secondary Education." The first section, written by Dr. Ivor Kraft, summarizes the views of four recognized spokesmen on secondary education and adolescence. The second section, written by 14 other educators, seeks to analyze these views. Dr. Kraft's summary concludes with these words:

> "There are no panaceas and no long term and permanent recipes for educational success; the processes and basic institutions of education--the schools--must change as life changes. But it is of utmost importance that we cease trying to shore up the schools with charity balls, teenage volunteer tutors, a handful of ex-Peace Corps volunteers serving at $4,500 a year, an enrichment program here, and a slightly jacked-up horizon there, under the theory that all we need to do is just work a little harder or have the Ford Foundation judiciously spread a few million dollars around the country to assist the culturally deprived.... For this proud and wealthy nation of almost 200 million souls, it will require far-reaching changes, billions of dollars, and many trials and errors in order to provide the youth of this land with a secondary school system that is worthy of the age of space and the impending age of leisure."

Against this background of urgency and concern, may I suggest what I consider to be several of the major problems and needs facing the large city school system over the next decade?

First is the problem of population change. One aspect of this problem is sheer numbers. In the years ahead, we shall be faced with increasing numbers of people who need education, jobs, houses and multitude of community and governmental services. With a present total population in the United States in excess of 180,000,000, this number will increase to at least 250,000,000 by 1985. Presently some 4,000,000 children are born each year in our country. By 1985, this number will reach 6,000,000 annually. By that date, 100,000,000 of our citizens will be under 20 years of age, while three out of four of the total population will be under the age of 45. Thanks to medical advances, all of our people will be healthier and longer-lived than any other generation in history. Following this trend, of course, there will be a consistent upsurge in school enrollments. A substantial portion of this increase will be at the secondary and college levels. It is probable, however, that the increase in secondary school enrollment in the large cities will not be as sharp as it will be in the suburban areas. With respect to the 14 largest cities, it should be noted that between 1950 and 1960 11 of them actually lost total population while only three gained. Each of the three, however, was carrying on an extensive program of annexation during this period. On the other hand, from 1950 to 1960, all of these cities, but one, gained in total public school enrollment. There is reason to believe that this seeming paradox will continue into the future--while the large city itself may continue to lose total population, the schools of the city may be expected to gain in total school enrollment.

The immediate impact of increasing enrollments will be reflected in the need for new sites and buildings, additional personnel and more equipment. This in turn means larger budgets. As a measure of the extent of this problem, a recent newspaper article pointed out that New York City would open 20 new schools in September and 17 more during the 1965-66 school year. To a greater or lesser degree, this is true of all large and small school systems throughout the country.

Another aspect of the problem of population change in the large city is found in the increasing number of pupils coming from homes that experience certain socio-economic deprivation. The Research Council of The Great Cities Program for School Improvement reported that in the schools of the 14 cities that are members of the Council, one child in ten was from a deprived home in 1950; that by 1960, the number was one in three, and that by 1970, the number probably would be one in two. It is obvious that such a trend carries deep meaning for curriculum, teaching techniques, instructional materials, supervision, in-service training, special services, and for all other aspects of the total school program. One approach to this phase of the general problem is found in the publication of the Research Council of the Great Cities Program for School Improvement entitled "Promising Practices From the Projects for the Culturally Deprived," issued in 1964.

As we deal with the problems of population change in the large city over the next ten years, our goal must continue to be excellence for all schools. Illustrative of this goal is a 1965 publication of the New York Board of Education entitled IMPLEMENTATION OF THE BOARD POLICY ON EXCELLENCE IN THE CITY'S SCHOOLS.

A second problem we shall face during the next decade has to do with the continued exponential explosion of knowledge. Our concern in this respect grows not only from the rapid increase of knowledge, but from the consistent narrowing of the gap between the development of new knowledge and its application to our everyday lives. By way of illustration--the principle of the vacuum tube was understood at the turn of the century but was not put to a major use until after World War I. The transistor was developed in 1948 and within five years was being used in many types of equipment. The solar battery was hardly out of the laboratory before it was traveling with our satellites. The electronics industry produced some 2-1/2 billion dollars worth of products in 1950. Ten years later it had jumped to 10 billion dollars. New knowledge and its rapid application to daily life will move forward on a rising curve in the years ahead. This has exciting implications for schools, particularly schools in large industrial areas.

There will need to be more frequent reappraisals of curriculum policies and practices. Metropolitan school districts will have to develop more efficient means for developing the curriculum and implementing it more rapidly in the classroom. The gap between a new idea and its use in teaching will need to be narrowed as has been done in the world of science and technology. This in turn has implications for the training and re-training of teachers. Periodic in-service training for all teachers probably should be made compulsory under a scholarship plan similar in many respects to that provided for only a few under the National Defense Education Act. Unless this is done, there seems to be no possible way in which the teacher may be kept abreast of new knowledge so important in the teaching process. There will, of course, need to be a wider variety of preparatory education in the secondary schools. This will include provision for pupils who plan to attend college, junior college, technical institutes or other post-high school educational institutions. We shall also need to re-evaluate terminal high school education. Practical and worthwhile educational opportunities will need to be provided at a higher level of accomplishment for those pupils who do not continue, so that they may become productive citizens in their community and in the world of work.

A third area of concern over the next ten years for the secondary schools of the large city probably will be in the fields of organization and staffing.

Generally, secondary schools in the large cities are large schools in terms of enrollments and facilities. A student body of three to four thousand, or even more, is not uncommon. This is necessary because of the density of the population of the area served. Too frequently, even with an adequate guidance program, the individual pupil becomes a number on an I.B.M. card. He can become lost in the crowd and subject to the same frustrations experienced by the college student attending a multi-university. Strenuous efforts will need to be made to individualize the pupil of the large city school. This may mean the organization of smaller schools within the larger school, with adequate staff and supporting services. It could mean the development of a more flexible plan of scheduling, the expansion of guidance services or required participation in extra-curricular activities during the school day. Of course, the heart of the program is the teacher. Fortunate is the school that is fully staffed with topnotch instructors. It is entirely evident that teacher education will need to have the highest priority in the years ahead if any of the things we hope for are to be achieved. The problem is both quantitative and qualitative in nature. It is apparent, of course, that statistically speaking, we shall not be able at any time during the next ten years to fill all of the teaching positions in the United States with fully certificated teachers. It is estimated that in my own state of Wisconsin, we shall need over 1,000 new teachers each year over the next ten years merely to keep pace with increasing enrollments. Although we are well situated with respect to the number and quality of teacher training institutions, the fact still remains that when consideration is given to the number who graduate in teacher education but do not teach; to those who retire from the profession; to those who drop out of teaching for other work; to the increasing numbers who are enticed away by colleges and universities;to those who go to other states to teach; to those who cease teaching to be married and to those who, for reasons of ill health or death, are no longer available, the picture over the next years is not too bright.

It is obvious that greater efforts will need to be made to interest the finest young people in our high schools in the possibilities of the profession of teaching. The organization of Future Teachers of America Clubs in the secondary schools will need to be stepped up. Administrators, teachers and principals who are presently cooperating in this effort deserve a word of sincere commendation. Many more scholarship opportunities will need to be provided. Secondary school guidance counselors and vocational counselors can be of great assistance in directing high school graduates into the field of teacher preparation. The recent efforts of the Federal Government in this field carry promise. Corollary to what I have said is the further need to tap other existing sources for teacher personnel. Possibly the most promising area in this respect is the large number of married women college graduates whose families are grown. With carefully organized programs of refresher work and intensive programs of professional training, many of these people are able to prepare themselves for teaching in an excellent manner. The literature on this subject is almost unanimous in commenting favorably on the effectiveness of this procedure. Through the cooperation of school administrators, principals, teachers, colleges of education and State Departments of Education, much has been accomplished. I might add that in my own city, through the cooperation of the schools and the local colleges and universities, a specially developed intern program for college graduates, without a professional background for teaching, is preparing and making available to us an increasing number of mature teachers each year.

In addition to the quantitative aspect to the problem, the next decade will surely be marked by advances in the quality of taught education programs. Although it was made some years ago, I still think the report of Dr. Paul Woodring, prepared for the Fund for the Advancement of Education, and entitled, "New Directions in Teacher Education," offers one of the best discussions of the problem. He suggests that better teachers become available only as we are able to attract a reasonable share of the ablest youth in the country and provide them with the best possible education, both general and professional. He calls for four dimensions in the pre-service education of teachers: (1) liberal education; (2) an extensive knowledge of the subject or area to be taught; (3) professional knowledge as distinguished from professional skills; and (4) skills in managing a classroom, working with children and young people and in the supervision of the learning process. (With these four principles I would certainly agree.)

It has been said that a good teacher can neither be bought nor made overnight. If this be true, then greatly improved and expanded programs of in-service education must be developed in the years ahead. In essence, then, what we shall need in the next decade is an increasing number of fine young people who choose teaching as a career together with improved programs of pre-service and in-service education. In this way, both quantity and quality will result.

A fourth problem will be in the field of instructional procedures. I predict that greater recognition will be given to work-study programs, particularly for pupils in their senior and possibly their junior years. In the areas of office occupations, specialized schools probably will be built in connection with large office buildings or in close proximity to them. This will make it possible and convenient to organize and carry on programs under which pupils in this area of study may spend a half day in school and a half day in an office without leaving the building. An example of this approach is the new school of commerce here in Chicago being built almost in the heart of the office building section of the loop. In much the same way vocational, technical and trade schools will be established in proximity to industrial areas to facilitate the development of work-study programs in this area of the curriculum.

Secondary schools will also make greater provision for independent study and research facilities in their building plans. Team teaching will become an established procedure and more and more reliance will be placed on instructional hardware, including all kinds of mechanical aids, language laboratories and libraries stocked not only with books but with tapes, film strips, records and other audio visual aids. I predict that in the years ahead, the secondary schools will be using these instructional resources as effectively as they are now used by the military and industry.

A fifth area of concern during the next decade will be that of carefully planned research and development. Recently, I heard an outstanding young administrator of one of the fine colleges of education discuss this subject. He defined research and development as a systematic activity directed toward innovation. He called for the organization of research and development activities in the large school systems as a major activity. He suggested that some of our old foundations are slipping away. He mentioned the emergence of a Federal system of education, the problem of providing equality of educational opportunity for all, the whispers that are heard about the possibility of a national curriculum, the increasing responsibilities and powers of State Departments of Education and the new procedures for dealing with teachers through collective bargaining and professional negotiations. He pointed out that in the years ahead, we are going to be obliged to do what we have been talking about. To accomplish this will take research and development--innovation. This function will need to be institutionalized in the school system. It is not something extra; not frosting on the cake, but an official and integral part of the total school organization. Only in this way can we plan and test and evaluate effectively.

A sixth and very special area of concern will be that of increased use of educational television.

Some months ago, I attended a meeting devoted to a consideration of the future use of educational television. One of the principal speakers was Mr. E. William Henry, Chairman of the Federal Communications Commission. Permit me to quote briefly from his remarks because I think they are completely appropos.

> "Whatever else it is, educational television is a part of television --a medium whose staggering impact on our society we but dimly comprehend. We know that more families own television sets than own bathtubs. We know that children up to the age of twelve spend as much time in front of those television sets as they do in school. These statistics do not tell us exactly what the effect of the television revolution will be. They force us to presume, however, that its importance for the quality and content of our daily lives will be overwhelming.
>
> "Educational Television's role in this revolution is not less important than its purely educational functions. That role is to fill a void, to provide a choice, to act as a stimulus and a gadfly in a medium which badly needs all of these things. One of our giant tasks is to overcome American television's cultural gap--our electronic Applachia--which has been largely untouched by commercial television's affluence. We must find

> ways to make the medium serve one of its highest and most natural uses--making knowledge and enlightenment, culture and beauty, stimulation and controversy available to everyone who cares for them, and not merely to the elite. Educational television cannot perform the whole task. But because it is a mass medium, it can and should be the cutting edge of our national, wide ranging effort."

Mr. Henry has, of course, stated the case for increased use of television most cogently. In helping to meet some of the problems outlined, this medium, now accepted as a powerful educational and instructional tool, will be used more extensively and with more sophistication in the years ahead. The very technology which has helped create some of our problems holds the answer to some of their solutions. There is no question that technology will be playing an increasingly important part in the field of education. As school systems become larger and more complex, educators will have to employ more technology to help solve the problems.

Television in a large metropolitan school district can be used to provide continuity of education throughout the entire system. Used properly, it can help reduce some of the educational problems resulting from the mobility of pupils.

Television is unique in its ability to bring to the classroom experts, experiences and demonstrations. Witness the superb teaching and learning experienced by millions of us on last Saturday as Frank McGee of N.B.C., with a model computer before him, explained how the astronauts used this instrument in controlling their orbital flight. In science, in history, in government, in driver education, in music, in art, in physical education, and in almost every area of the curriculum television can bring the expert directly into the classroom to assist the teacher in the task of improving instruction.

Television can have a powerful influence in the field of teacher training. In-service courses can be carried directly to the individual schools following the close of the school day on the basis of a regular schedule. Television can play an active part in introducing experimental programs to teachers and pupils. One example would be our own use of television in introducing a new adoption of arithmetic books to our own staff. Assisting in the series of telecast were our own supervisors, specialists from the publishing company and the authors.

Television can be used as an aid for counselors. Many excellent programs on the world of work and vocational choices can be developed with great profit to the total educational program.

Television can be used effectively as a supervisory aid. Supervisory telecasts directly to teachers in their schools have been carried out most satisfactorily in many of the large school systems. Television provides a rich resource for bringing to children in deprived areas enrichment programs that otherwise could be provided only on a limited basis. An example would be the "High Hopes" series designed to show the achievements of outstanding graduates from the secondary schools.

The list of opportunities for the use of educational television in the schools is unlimited. Our need in the years to come is to make full use of it as a superb educational tool.

Finally, it should be said that none of these things we envision for the future can become realities without adequate financing. Whether such financing comes from local, state or federal sources, there must be a tremendous infusion of dollars into the main stream of American education. It costs more to do the job in large cities.

NEEDS AND PROBLEMS OF HIGHER EDUCATION IN THE FUTURE
VIEWPOINT: THE COMMUNITY COLLEGE

By
Donald J. Carlyon, President
Delta College, University Center, Michigan

The presentations so far have been on such a serious and high-level basis, I hesitate to start with a story; but since my entire presentation is based on that story, I don't have much choice. Forgive the story about the clergyman--my father was a clergyman, so I think this will give me special privileges. A story about two friends in a small community, one a priest, and the other a protestant clergyman, who were great fishing companions. A rabbi was found for the community, and it was discovered that he liked fishing, so they invited him to go with them on their next fishing expedition on a small lake at the edge of town. They got in the boat, started across the lake, got out a little ways, and realized they had left their can of bait on the shore. The protestant clergy said, "I'll go back and get it." He stepped out of the boat, walked across the water, picked up the bait can and walked back to the boat. The rabbi was a little startled, but since the priest didn't say anything, he thought it best not to make any comment. It came time for lunch. By this time the rabbi had time to think and he was fearful of what was coming next and the priest said, "Well, I'll go back to the little store on the shore and get something for lunch." So he, too, stepped out of the boat and walked across the water, got lunch and walked back to the boat. By this time the rabbi was very much on the spot. Later, when they decided they'd like a little snack so they could stay out fishing longer, the rabbi said, "Well, I guess it's my turn," so he stepped out of the boat, and promptly sank to the bottom of the lake. As he struggled back to the surface, the priest turned to the clergyman and said, "Shall we tell him where the rocks are?"

My point is simply this. In our particular field of specialization we must know something about where the rocks are, slightly below the surface, so it will be possible for us to walk across the water. Presumably, as we try to get to the bottom of the projected uses of television in education in the next decade, all of us here and most of those who will read decisions of this conference at a later time, will be aware of the location of most of the rocks of educational television. However, the community college, being a relatively new social invention, knows where some of the special rocks for community college utilization of educational television are located. These rocks can be identified with the definitions and special purposes of community colleges.

Every community has a great many elements in it. One of the main features of the community college either is, or should be, that it is closely responsive to the various elements of the community of which it is a part. Business, industry, and professions, elementary and secondary school systems, sometimes other institutions of higher education, individual students' families, etc. Along with wide differences in ages, of widely varying interests and educational backgrounds, all are elements of a community. The community college, if it is to fulfill its function, must be concerned with each of these and with the broad ranges within each of these areas. What types of service then can be offered by the community college? First and foremost, it offers always, or nearly always, a transfer program for those going on to the baccalaureate or graduate work. Secondly, it provides vocational, technical, terminal, or semi-professional training, call it what you will, the types of courses that offer something to the student that prepares him for service to the community and for the world order. If he simply takes one or two semesters of work, the student should have been able to get something out of it that will contribute to what he can do for himself and the community. Thirdly, the community college offers continuing education covering not only the transfer courses and the vocational, technical, terminal-type of courses, but also those avocational courses, the in-service training, the work-study type, and the retraining type of program, courses that are not normally offered to the typical college student in today's program. Next, it offers the cultural community service type of program. An example of this at Delta College is our composer-in-residence. The composer is a member of our faculty. Part of his responsibility includes the development of symphonia, lecture-type sessions that can be used both for on-campus and community presentation, drawing not only on his own background but on the backgrounds of musicians and other artists in our particular area, and drawing on those artists that come to the area for performance of one type or another.

These, then, are four solid program rocks which offer firm footing for the community college's television utilization. They are fundamental to the community college obligation and all susceptible to the instructional powers of television. Now let me go back to the basic rocks in the effective use of television in education. Most of us are aware of them, but it doesn't hurt to review them.

One of these basic rocks, referred to by nearly every speaker so far, this is the sometimes nebulous term, quality. Quality must be a part of all of our thinking, whether we are talking about education itself or educational television. A second basic rock in the community college utilization of television is a total view of the television technology. We do not distinguish between educational, instructional TV, closed or open circuit. Television is a total educational tool to make it possible for a community college to be a broader circuit. There's a third rock and this is principle we so often ignore. And it is too often ignored by the community, by our forces of control, and, surprisingly, often by business and industry itself. It is the principle that quality costs the same no matter who's buying it. For some reason we seem to think that in education we can get something cheaper than business and industry. Let me give you an example of the approach to quality that we think must be a part of all that we do. When Delta College first opened, which was not so long ago, we had a question as we were designing our closed circuit system as to whether or not our equipment should be high quality for closed circuit with an eye to future open circuit use, in view of the very distinct possibility that open circuit channels might be available in not too many years. Our decision was to buy the best quality black and white equipment available to us that would serve the purposes of both closed and open circuit, rather an obvious type of foresight. It paid off when we were allocated an open circuit channel. It was therefore not necessary to replace all our equipment or to simply add equipment that would serve for the open circuit purposes. We found a steady step on this basic rock.

A fourth basic rock is that a finely finished product rests on the support of not only top-quality equipment but top-quality personnel as well. You cannot buy personnel cheaper simply because you are an educational institution. If we end up with a finely finished product, both technically and in program quality, then it makes it possible for us to exchange tapes, programs of all types, with other educational institutions not only in our immediate area but throughout the country. Television makes it possible for the community college, if we employ top-flight personnel, to draw on the team teaching concept through which we can draw out the best from a variety of individual teachers, even though we may not have available normally on our faculty some person who is thoroughly knowledgeable in all of the various aspects to be covered by a particular program. It also is possible through using television for us to draw on the community itself for the practical, grass roots experience that might not be available among our own faculties. Then a fifth basic rock is signal quality. The signal for an open circuit transmission must be as good as any commercial station if we hope to get a reasonable sized viewing audience.

All of what I have said should strongly suggest the importance of a combination of quality and service.

There's a special affinity that we sometimes miss between a community college and open circuit television station, and that is that it serves a limited physical area. This makes it an especially valuable tool for a community college because the field of transmission can be designed to fit very closely the service area of the community college itself. Allow me, then, the recapitulate some of the uses of television which render television particularly applicable to the needs and purposes of the community college.

First of all, to business and industry we can provide services both of an open and closed circuit type. Included services are executive training, business report methods, foreman training, and upgrading at almost any level of business and industry. In each of these areas these types of services have already been developed at Delta College. We are somewhat ahead of many of the other educational institutions in providing this type of service to our immediate community. Secondly, we can provide programs for other educational institutions, the type of program that is particularly suited to their needs. Particularly can we be of value to the smaller school districts, because it's possible for us to provide a wide range, almost any program for that matter, for the smaller district which might not have available on its faculty or staff the type of faculty talent needed to provide a specific program. For example, our program for fall provides a wide range of programming including modern math, Spanish, German, Public Affairs, and French. These courses are not really unusual, but in working closely with the community, we find that we can frequently supply the specific programs and specific courses that will appeal to the school districts in our area.

Thirdly, we can supply cultural and public service programs. This I have already illustrated with mention of the composer in residence. Fourthly, we can supply personnel services to those students in the community college, to the community at large and to business and industry, this is an area that is rapidly developing.

All of these different types of services imply a continuing evaluation and re-evaluation of everything that's done to be certain that it is of specific service to the community of which we are a part. I'm not saying that the community college provides a type of service that no other station or no other educational institution, whether it be secondary or higher education, could provide. What I'm saying is that because of this limited range of service in physical area it should be possible for the community college to be closer to its community, closer to the business and industry, to educators and to professional people and to find out essentially what it is that's needed in our particular service area.

Television provides a challenge to the community colleges. We feel it is the challenge of the community college to do everything we can to provide a special service to the community utilizing this particular tool. This passes a challenge back to the community to make certain that it takes advantage of the services thus provided by the community college and is aware and appreciates the full potential of the services such a community college provides the total community.

THE MEDIUM SIZED COLLEGE DURING THE DECADE 1965-1975: A PROBLEM OF NUMBERS, QUALITY AND COSTS

By
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During the past five year period I have served either as a member or chairman of thirty or more North Central Association examining teams which have been sent to review academic programs in large and small, private and public, colleges and universities, in Colorado, New Mexico, Nebraska, Iowa, Illinois and Ohio. If the researcher who has conducted a case study or an in-depth interview study is able to arrive at generalizations which are apt to be more valid and reliable than the researcher who utilizes a questionnaire or who generalizes solely on the basis of normative data reported by the U. S. Office of Education, I then, would hope to make several knowledgeable observations about the present and future character and direction of higher education in medium sized colleges in our geographic area. Whereas my experience does not qualify me as an expert witness in the area of educational television, I believe I may speak with some degree of authority on the needs and problems of higher education which plague us now and which will be inevitably accentuated and accelerated during the coming decade. Three complex interrelated problems may be identified which require viable solutions. These relate to: (1) the increasing number of students to be served; (2) maintaining and improving the quality of the educational experience; and (3) providing for both needs (quality and quantity) within the framework of realistic financial limits.

National college enrollments now number approximately 3.5 million and conservative estimates project this figure to 7 million by 1970. If present curricular patterns and major institutional purposes remain the same during the next half decade, state supported colleges and universities in Colorado will increase by an average enrollment of 55%, with a range from 31% at the University of Colorado at Boulder (13,500 to 18,000) to 156% (1,956 to 5,000) at Southern Colorado State College at Pueblo. I conclude that the projected rate of college enrollments in Colorado, although slower, is typical and modest rather than extreme when compared to actual and projected enrollment rates in Ohio, Illinois, Michigan and Wisconsin, where population pressures have required the rapid expansion of existing college and university facilities, the creation of many totally new institutions, (including new branch and extension centers) junior college systems, or some other combination of old and new resources to meet their immediate needs. Colorado State College in Greeley, in 1963-64, enrolled 4,600 students and will enroll 8,000 in 1970, a 72% increase in the next five years. This increase will require the addition of 156 new faculty members. To accommodate the increased number of students anticipated at Colorado State University, Fort Collins, (9,000 enrolled in 1963-64 to 13,500 in 1970) and at the University of Colorado 13,500 in 1963-64 to 18,049 in 1970) an additional 724 qualified faculty members will be needed in order to maintain current existing programs without giving any consideration to faculty requirements necessary to support new and developing programs at the undergraduate and graduate levels at both institutions during this period. As an examiner and as a member of the Executive Board of the North Central Association, I can document and testify to the rapid expansion of graduate degree programs in practically all areas of specialization. Fully qualified faculty members must be produced, recruited, or reallocated to satisfy these needs.

Where are the new and fully qualified faculty members required to provide for expanded undergraduate enrollments and new and expanded graduate degree programs going to come from? Currently, the major universities producing new Ph.D.'s tend to cannibalize their own products. In addition, the traditional research function and research expectation of university faculty personnel, accelerated by recent massive federal and private foundation support have tended to direct our present limited supply of able and qualified teachers away from the classroom and into research activities. Professorial advancement, professional recognition, and less confining schedules motivate the teacher-scholar to pursue research at the expense of classroom instruction. Scholarly research is certainly required to provide quality undergraduate and graduate instruction. The point is, this force tends to further restrict the limited supply of available and potential teaching faculty members. Furthermore, I generalize that the trend in all colleges and universities is to reduce faculty teaching loads across the board so as to provide needed time to enable teacher-scholars to engage in productive research, to share in the process of faculty academic decision making, to permit student advisement, and to provide time for adequate instructional preparation. Today the typical undergraduate college teachers' teaching load in those institutions which I have examined in the NCA is 12 hours per week. The Council of Graduate Schools has recommended a limit of 9 hours per week for persons engaged in graduate instruction. In fact, I judge the actual graduate instructional load of many members of graduate faculties in many of our well established and expanding institutions to be far less than 9 hours due to full funded contract research projects.

One of the dilemmas, then, confronting higher education is to assure quality education for vastly increasing numbers of college bound students entering expanding undergraduate and graduate programs--the concern of providing adequately for both quality and quantity. Not only is our supply of fully qualified faculty personnel limited and being redirected into graduate and research areas, but our rate of production of new Ph.D.'s, although increasing is incapable of fully satisfying the demand of 1965. It is inevitable that this shortage will become painfully acute in the immediate years ahead. In addition, we may anticipate that the needs of industry in an expanding economy and the needs of government will continue to divert academically qualified personnel away from our classrooms. Last year, American universities produced approximately 125 Ph.D.'s in mathematics, and I am told, that only five elected to enter college teaching.

Obviously, these forces--internal and external--will have a tremendous impact on the quality of instruction in the "medium sized" and "medium financially supported" college during the next decade. Institutions like Colorado State College will be forced to innovate, to find new and more efficient ways of utilizing all available talent. One hopeful possibility is television. If a professor's average teaching load is 9 hours, a student increase of 25% without corresponding increase in new faculty will raise his teaching load to 12; if his teaching load is currently 12, it will increase to 15. Television can assimilate this increase in numbers and maintain the current teaching load ratio with present faculty. What impact will the instructional television route have on the quality of instruction?

First, let us recognize that not all instruction will be presented through the medium of television. Certainly those courses which today are offered to large classes (usually in multiple sections) in lecture form, may be just as effectively presented and to my mind, more effectively taught by television. Wilbur Schram[1] observed in his discussion of educational television during the next ten years that:

1. In over 300 controlled experiments, administrators, teachers, and students concluded that the average student is likely to learn about as much from a televised class as he will from instruction utilizing ordinary classroom methods.

2. In some cases television is more effective--better visibility due to magnification, better visual teaching materials, better instructional preparation.

3. Television instruction is especially effective in lecture-demonstrations (mathematics or science). Instruction in history and humanities has been less successful.

4. Televised instruction has been more successful in elementary schools than it has in high school or college.

5. Most teachers who teach on television come to like it.

6. The real center of teacher resistance to instructional television is in the college.

7. Students generally prefer to be in small classes, but no differential effect of class size on learning from instructional television has been reported in cases where viewing conditions have been equally satisfactory.

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[1] Wilbur Schram, "What We Know About Learning From Instructional Television," Educational Television--The Next Ten Years, The Institute for Communication Research, Stanford University, 1962.

Medium sized colleges within the North Central Association area are already "tooling up" for greater participation in campus level closed circuit television instruction. These institutions are equipped with modest studios, control rooms, video tape recorders, and a campus closed circuit distribution system designed to serve as many as 600 student viewing stations. These costs have been estimated at roughly $100,000. Plans are underway in several NCA states to extend the campus level concept to the "inter-campus exchange level." A consortium of colleges and universities utilizing compatible campus level TV equipment will permit the faculty talents at one institution to serve the academic needs of several others at little additional cost. In fact, the elimination of some duplicate course offerings may actually constitute a large and significant savings. If a Toynbee or a Max Lerner gives a lecture or teaches a course at the University of Colorado, why shouldn't his presentations be made available to the students and faculty at Colorado State College to reinforce and enhance the educational program?

I predict by 1975 that the multi-campus TV consortium concept will be extended regionally, utilizing state and federally financed distribution systems. Either low level broadcasting or existing microwave relay systems constitute possibilities which will enable formal instruction at one source to serve several institutions. Eminent mathematicians, sociologists, geographers, now in short supply, will serve a much wider student clientele.

The newly created Commission on Higher Education in Colorado is considering the feasibility of presenting formal courses at the "broadcast level" in its efforts to assure Colorado students quality and opportunity while seeking ways to eliminate costly unnecessary duplication. Low level broadcast instructional television will permit college instruction in dormitories, in the home, in off-campus fraternity-sorority, and in non-dormitory housing. Implementation of this possibility will have a tremendous impact on campus housing costs and the educational specifications for academic buildings with corresponding savings which may be used to offset the costs of the televised instructional program. Courses offered by one institution will be taken for credit at another, public and private. Academic talent available at one institution will be made available at another. Instruction involving the use of a cyclotron or an electron microscope at one institution will be shared with other colleges within the range of the broadcast. In Colorado, Colorado State College has the only modern laboratory school and special education facility to support research and observation in teacher education. Broadcast television and video tape will make these facilities available to all regional institutions. To financially implement the concept of low-level broadcast, recognizing that each campus will need a transmitter, tower, antenna and studio transmitter link--an additional investment of approximately $150,000 per section in local funds and $200,000 in federal funds will be required. It was earlier estimated that a modest closed circuit TV system, serving a single campus, will cost $100,000.[1]

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[1] Television for Higher Education in Colorado; A Five Year Plan, ETV Committee, Association of State Supported Institutions of Higher Education in Colorado, April 1, 1965.

Because one commitment in educational television inevitably and logically leads to another, I predict that Colorado and other states plagued by similar problems will have statewide educational television by 1975. The benefits enumerated previously will consequently accrue to all schools at all levels of education, and to all communities in the state.

ANTICIPATED PROBLEMS

Any new media or concept which departs from tradition is met by resistance. This is particularly true in the academic community. We may anticipate faculty resistance and the expression of concern about the growing "depersonalization of the student" stemming from the recent University of California experience. Colleges will need to offset this factor by providing qualified discussion leaders and ample opportunities for students to discuss the application of those ideas, concepts, and principles which are presented.

Faculty members assigned to present television lectures and demonstrations will require legal safeguards protecting their creative efforts comparable to those afforded authors and composers by our copyright laws. The matter of compensation for residuals will require agreement.

Cooperative agreements among private and public institutions will be required to determine policies relating to shared costs, video tape production and rentals, credit and tuition, etc.

College teachers who insist that their classroom is their private domain and that academic freedom precludes any unauthorized visitation will be unwilling to prepare presentations for an invisible and unknown audience.

These problems represent only a few which may be anticipated. However, we need to recognize that we also have acute problems without instructional television. The apparent benefits which can accrue to each institution and to each learner through the careful selection of appropriate television courses, and the judicious use of television materials, should make it possible for the small and the medium sized college to meet the needs of growing enrollments, to provide quality instructors in fields where qualified personnel are in short supply, and to satisfy both needs within the limits of the financial resources which will be available to them.

COLLEGIATE LEVEL NEEDS AND PROBLEMS OF EDUCATION IN THE FUTURE

VIEWPOINT: THE LARGE (MULTI-PURPOSE) UNIVERSITY

By
Jackson W. Riddle, Associate Dean of Faculties
The Ohio State University

The primary problem as I see it, facing institutions such as ours (Ohio State University) for at least the next ten years, is to maintain and, hopefully, to improve the quality of education in the face of three critical factors aligned in opposition: (1) increasing enrollments, (2) proportionally fewer faculty members, and (3) the information explosion. We are all familiar with increasing enrollments and nothing needs to be said further to belabor that point. That all people are aware, however, of the proportionate decrease in faculty members available for meeting the increasing enrollments is in serious question. Recently the United States Office of Education estimated the needs of the nation's universities, colleges, and junior colleges at 21,000 new teachers for each year during the next decade. However, the graduate schools of the nation's universities currently are producing only a little more than 10,000 Ph.D.'s annually, and, as you know, many of these do not go into college teaching but slide away into governmental and industrial positions. Therefore, it is apparent that the reduction in the overall faculty quality of an institution is a real danger. To rephrase it, excellence is being diluted. In regard to the third factor impinging on the quality of education, the information explosion, let me remind you that the body of scientific literature is doubling every seven to eight years and that new knowledge is being accumulated at the rate of an additional 168-volume encyclopedia each day.

How, then, can institutions of higher learning, regardless of size, continue to function effectively when a faculty, insufficient in numbers and in part, at least, inadequately educated, is being crushed between the pressure of increasing student enrollment on the one hand and the pressure of rapidly expanding knowledge on the other? This is what I call the "campus crush," and it is forcing our larger universities, in particular, to redefine their missions. Even the most heavily endowed private institutions with restrictive admission policies can afford no longer to "be all things to all men." In the face of hard facts, the large, public-assisted institutions, with enrollment policies which are either open or only slightly restrictive, cannot confront the future without deep soul-searching regarding their essential missions in higher education--and this is precisely what is going on, both overtly and covertly; for example, major universities are turning larger percentages of their budgets and energies into graduate and professional education with the rather forlorn hope that technical institutes, junior colleges, and four-year liberal arts colleges, both private and public, will siphon off the bulk of the undergraduate enrollment pressure.

By engaging in an intensive institutional analysis, in relation to the future needs of its own constituency and those of the nation as well, a major university must conclude that it is no longer possible to offer an academic smorgasbord loaded with all possible kinds of esoteric delicacies. Judgments must be made that some departments and areas of specialization must be kept in top condition at all costs, that other good departments or areas must be made better, that still others must be kept at a level of respectable mediocrity, and, lastly, that some must be deleted. This may seem to be a rather cold-blooded, diagnostic procedure and the subsequent necessary surgery may be painful, but in extremis radical measures may be justified. Some institutions are exhibiting symptoms and signs indicating they are already suffering from malnutrition, impaired metabolism, partial paralysis, obesity, and even constipation. In view of the possibility of inter-institutional cooperative efforts, a redefinition of institutional purposes, along with related, necessary internal readjustments, need not be deleterious or as crippling as one might think.

Along with academic housecleaning and reorganization, large universities, and even many smaller institutions, are having to insure the fullest possible utilization of their facilities, through development of year-round educational opportunities and expansion of course schedules into the evening hours and Saturday mornings. Of much greater importance, they are finding it necessary to provide, in every way possible, more effective assignments of faculty. In this regard, every effort must be made to reduce the nonteaching and nonresearch activities of the faculty so that their precious time and energies are conserved and are not dissipated in nonscholarly tasks. More clerical and secretarial help must be provided, and we must let the computer do as many routine jobs as possible. It must be clear to all that this readjustment of faculty duties is not aimed at "getting more mileage out of the faculty" or increasing their loads, but rather that these measures are designed to provide better opportunities for faculty scholarship and for more and improved personal contacts between the faculty and student.

There are many ways in which the improvement of teaching can be sought, but I intend to confine my remarks at this time to aspects of that problem which are touched by television. In some instances instructional television is used to bring a senior professor, or indeed in too many situations, any teacher, to more students; in others, instructional television is used purely as a supplement to regular presentations. That instructional television can be as effective as the ordinary classroom situation is no longer in doubt; in many instances it can be dramatically superior. That instructional television can save money for the institution when the numbers of students are sufficiently large, also is no longer in doubt. But to put a television camera in front of a lecturer is not enough; he needs expert production and direction. This kind of highly-professional assistance plus the extraordinary physical facilities needed, make instructional television and the preparation of televised course materials no job for institutions with marginal resources. Efforts of this kind, then, are clearly within the capabilities and, hence, the responsibilities of those larger universities which have the equipment and the technical and professional staff. But even in these institutions, instructional television has not yet begun to realize its potential for several reasons. Time does not permit a full delineation of all factors involved in this problem, but one of the most important reasons is the reluctance of faculty members to consider and accept changing opportunities and challenges in meeting their traditional day-to-day responsibilities in the classroom. Often I have been amazed that college and university faculty members, who, individually and collectively, open and explore the frontiers at the periphery of the knowledge corpus, and who are so openminded and liberal in attitude on so many subjects, can also be so ultraconservative and resistant to change in the methodology of their day-to-day teaching activities. On some campuses part of their reluctance probably can be traced to the lack of policies designed to define and protect adequately the rights of faculty who participate in televised instruction. When this hurdle is topped, real progress will have been made.

The student attitudes toward instructional television frequently need changing as well, since many of the early television experiences in the classroom were less than ideal. Student reactions propelled along the grapevine tend to precondition or sensitize incoming students against courses taught by television. Only increasing the excellence of these courses will gradually result in altered student attitudes toward them.

The possibility of interinstitutional exchange of whole courses or instructional units is a highly intriguing one, and one which has had considerable study and investment of both time and money. Unfortunately, the general trend has been for the faculty of one university to regard with a disparaging eye the course which has been produced by another institution, even though the department involved is widely respected and the course is of high caliber. An appealing solution to this problem may lie in producing and depositing in video tape libraries, units of instruction of varying degrees of complexity instead of intact courses. For example, if Professor X at University A, who is a renowned scholar in the area of photosynthesis, would develop instructional materials on this topic of his specialization, and if Professor Y at University B would develop similar materials on the DNA molecule, and if other widely recognized scholars from other institutions would make contributions from their own special fields of competence, each of these individual units could be made available on loan for the construction of a course or courses, as desired; in this way each institution would be able to supplement its own strengths, and the quality of instruction would be improved for all participants. Such resources would be of immeasurable value to the small college and to the medium sized university, also.

Interinstitutional cooperation, in many ways, can be a most important factor in meeting the "campus crush." There are now examples throughout the nation in which colleges and universities of varying sizes are banding together on a cooperative basis to supplement each other and to share expensive resources. One of the earliest and certainly the largest example of interinstitutional cooperation is the CIC. This consortium, known as the Committee on Institutional Cooperation, which embraces the Big Ten universities and the University of Chicago, and which I like to call a "mega-university," is a purely voluntary association. Cooperation exists in many areas at all levels and in any institutional combination. Like other educational innovations, the speed of acceptance and utilization has been rather slow. However, this organization has made and is now making, amazing strides in multiple areas. They now share certain common large research facilities, each of which is too expensive for any one institution to provide and maintain; there is the Traveling Scholar Program which allows almost ad libitum transfer from one institution to another by graduate students who desire to study with a particular professor at a different university, or who wish to use a special library collection or a unique laboratory facility for part of the academic year. These institutions have agreed, also, on selective coverage of the exotic languages so that duplication in these fields, where qualified faculty members are so rare, is avoided, and single strong programs can be developed. It will be of interest to those attending this particular seminar to know that these eleven great universities have sponsored conferences to promote the development of policies on faculty rights and instructional television as well as on the pooling and exchange of video tapes. Next month I shall be returning to Chicago for a second session with a group of CIC representatives to continue discussions of the possibility of a computer network among them to be used for instructional purposes at the university level. It is this kind of institutional sharing and cooperation which will take the sting out of the wounds resulting from each institution's own self-analysis, dissection, and excision.

As an effort to accommodate more students, many universities, and even smaller institutions have yielded to pressures and have established branches or academic centers in outlying communities. To maintain the fiction that education at these branches is of the same quality as the education on the main campus is very difficult; to insure that it is of the same quality is well nigh impossible. There are problems with resident versus commuting faculty and with the lack of identification of resident faculty with the main campus departments. They inevitably regard themselves, and in truth become in some respects, second-class citizens of the faculty despite well-intentioned administrative efforts to the contrary. Here, closed circuit television is an ideal way to bring a campus professor to the branch for a lecture. He can meet his classes regardless of the vagaries of the weather. To become effective, coordination of a high order is necessary; the quality of the teaching assistants or instructors and their supervision must be identical with that on the main campus. For several years, The Ohio State University has maintained a two-way audio, one-way video contact with our Graduate Center at Wright-Patterson Air Force Base. It is our conclusion that this has been a very effective method for conducting campus-quality instruction by remote control. I predict that in a comparatively short time our university branches will be permanently connected to our Telecommunications Center either by microwave or by cable network.

Another aspect of adjusting to the "campus crush" is to make the student more responsible for his own learning. Such steps in the next ten years will depend greatly upon highly sophisticated and expensive equipment as well as upon a considerable expansion of the number of seats in libraries. Carrels with direct access to video tape replays, to tape recorded information, to programmed learning devices of other sorts, and even to computers, will become standard equipment. Presently on our own campus, the Listening Center facilities are being expanded to reach outposts in the dormitories, the library, and the student union. These campus extensions of the Listening Center will enable the student to dial directly for the particular program or lesson material he wishes, whether it be in one of several foreign languages, in music, or in some other discipline. Dramatic expansion of this kind during the next ten years is inevitable.

The second major problem facing the large, multipurpose university in the years ahead, as well as right now, is that of avoiding the submergence of the individual; and I speak not only of the individual student but also of the individual faculty member. In his inaugural address at the State University of Iowa, President Howard Bowen stated this problem so well that I would like to read a brief excerpt from that address:

> "We live today in a world of teeming populations and vast urban conglomeration. The individual is part of immense organizations such as corporations, labor unions, farm organizations, and government bureaus. The individual sees himself as a kind of atom in a seemingly infinite society. The individual becomes a number, a cog in complex machinery, an object to be manipulated, a standardized unit that is expected to adjust to a norm. In this atmosphere, his sense of responsibility and his concern for his fellow man tend to be dulled. Mass society bears down with special force on young people.
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> "A university is perhaps our most effective instrument for counteracting the conformity and anonymity that society tends to impose. A major purpose of the university is to draw out each personality, to encourage expression of particular interests, to seek out genius, to discover and test new ideas, to engage differing points of view in free and fruitful discussion, in short, to preserve and promote individuality. The only conformity the university requires is loyalty to the search for truth.
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> "Unfortunately, as a university becomes larger, it too may take on the characteristics of the huge organization. It may become bureaucratic; its regulations may be ponderous and inflexible; its educational program may be mechanical; it may describe people and their performance only in terms of numbers that can be cranked into computers. As the university grows, it may lose its capacity to confront students and faculty members as individuals, or to be concerned about such human qualities as integrity, courage, social sensitivity, aesthetic appreciation, imagination, concern for fellow man, and religious commitment. I think many of our larger universities are in danger of losing touch with the individual, or emulating the factory, rather than the alma mater."

Indeed, one of my colleagues recently was heard to say that "the large, multipurpose university more closely resembles a knowledge industry than a community of scholars." I believe these universities must strive to recapture and to retain as much as possible of the traditional atmosphere of the scholarly community. When faced by the complications of bigness, and when confronted by the realism of legislative appropriations for higher education, one can ill afford to indulge in sentimental nostalgia for the days when every professor knew all the other members of the faculty and each was personally well acquainted with at least his own students. Some aspects of the cloistered atmosphere are irretrievably lost; others may be recovered or preserved by conscious determination. Indeed, as you know, some institutions are returning to, or developing as, a collection of small residential colleges; counselors are being added to the limits of available funds, qualified people, and space. These efforts and others are deliberate attempts to combat the tendency toward submergence of the individual.

Today the average, lower-division undergraduate, especially, tends to regard himself as suffering from the IBM-TV syndrome. That the student actually may suffer from this syndrome, or that he even thinks he suffers from it, is a manifestation, at least in part, of failure by the university to convince students that mechanization of the registration procedure, computer scheduling, electro mechanical or electronic test scoring, and television instruction should not be construed as a de-personalization process conceived in wickedness and born out of disregard for the individual. Rather, it must be made clear that technology is being used to free the minds and hands and time of more people in order to provide the individual counseling, the personal attention, and the time which each student sorely needs and desires.

Instructional television can and should make the student grateful for the opportunity, even by remote control, to study under a superior professor of national or international reputation, rather than under someone of lesser ability or stature. Dissatisfaction with televised instruction is an indication that the "master teacher" either was really not that, or that his performance could have been vastly improved through more professional production and direction, or that the integration and coordination of television lectures with discussion and quiz or laboratory sections was not sufficiently refined. These faults are ours--not those of the student. Even in the classroom, less than the best engenders criticism; when on television, less than the best is multiplied several hundredfold or more.

Although, in the past decade we have seen extensive usage of instructional television in medical and dental schools with success, and a limited use of instructional television in some basic undergraduate courses, another area for potential television usage has been almost completely neglected; I refer to the curriculum for the education of teachers. Certain aspects of teacher-education are ideally suited to presentation and study by television. Just as a one-way mirror window or an invisible TV camera can allow medical students to sit in on a psychiatric interview or to see at close-range a complicated surgical procedure without disturbing either the individuals or their environment, so instructional television could be used in demonstrations and situations for study in teacher education. I hope to see significant development of this application in the next decade.

Although there are other needs and problems of higher education in the next ten years which cannot be acknowledged in these few minutes, there is one which falls naturally into the responsibility of the large, multipurpose university, chiefly because of its physical facilities, its store of technical competence, and its wealth of intellectual resources. I am speaking of the function--which some of these institutions now have accepted in varying degrees--that of general adult education and general cultural programming for the community. Through university-owned television and radio stations, the rich resources of the institution can be taken into the homes of the general public. In the future, as the daily workweek shortens for millions of adults, there will be a growing thirst for adult education of both credit and noncredit varieties. Whether such academic and cultural programs are distributed by closed circuit, open circuit, or by pay-TV (the latter being a possibility which the educational world has seemed to overlook so far), are neither beside the point nor mere technicalities. What must be recognized, also, is the potential magnitude of the demand, and thoughtful planning must be instituted to fulfill it. How the televised material observed at home is to be evaluated with appropriate testing, and how it is to be integrated into a total educational experience which will merit academic credit will take skillful and innovative planning.

Unfortunately, the battle for maintenance of quality of instruction and the battle to avoid submergence of the individual will not be won here at the Palmer House. These engagements have to be fought on each campus, in each department, and, eventually, by each member of the faculty and administration. Only through a concerted effort, based on total institutional recognition of the otherwise inevitable trend, and determination to correct it, will the war be won, and large, multipurpose universities will be able to enjoy the best of both worlds by retaining the attitudes and atmosphere of the scholarly community along with and, to some extent, because of, the judicious use of modern technological developments.

CURRENT DEVELOPMENTS IN INSTRUCTIONAL BROADCASTING

By
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Educational Television Stations,
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At the 1963 Seminar called by the North Central Association, several statements were made concerning the use of television in education, and on practices and new developments across the country. My purpose today is to extend those statements to August, 1965, and to extrapolate, gently, where possible. Two basic areas are under consideration: (1) closed circuit television, which is devoted, usually, to classroom instruction exclusively; and (2) educational television stations which serve schools and home audiences with broadcast programs.

As you will notice quickly, there are still several facets of educational television about which we know very little. Since 1963, however, we have continued to learn as we grow, and I believe a noticeable shift in emphasis is beginning to take place.

We have passed beyond the state at which we must be preoccupied with hardware, signal transmission and reception, and the very establishment of television as an educational medium in communities and institutions. The focus seems to be shifting from television to education, where we hope it started. As the novelty of television wears off in our daily lives, educational television becomes, as it should be, a part of education, and not simply a form of television. This is important as new stations and closed circuit installations come into being.

CLOSED CIRCUIT TELEVISION IN EDUCATION

Closed circuit television systems are increasing in number, but at a pace we cannot precisely define. Since no federal licenses are required for such installations, it is possible for school or college--or any other institution--to purchase the necessary equipment and to start instruction with television without any publicity at all. Thus, there is no practical way of learning which schools and colleges across the country are embarking on experiments or actual teaching with television. At your 1963 Seminar it was estimated that 500 closed circuit systems would be operating in 1964. This was probably an accurate prognosis and indeed sometime during the last year there were undoubtedly that many installations. Estimates of the number of CCTV systems now in operation vary, but a fair guess would be that there are 800 closed circuit systems in the United States at this time. In addition, hundreds of schools and colleges are either installing equipment now or planning for its installation within three years. The Technological Development Project of the National Educational Association has published a document titled "Studies in the Group of Instructional Technology, II: A Directory of Closed Circuit Televisions in American Education with a Pattern of Growth." This report is based on a study made two years ago, and its information is still important.

The study indicates that slightly more than half of the CCTV systems in the country are in institutions of higher education and that about one-quarter of them are in elementary and secondary schools. The remainder are in medical institutions and military installations. These systems, of course, vary from operations involving single lecture halls or school buildings to the extensive statewide systems such as in Texas where ten colleges are tied together by a microwave, with programs originating from a central source, and such as the state wide network in South Carolina which serves more than 59 school districts. The NEA report goes on to say that CCTV has developed about twice as rapidly in institutions of higher education than in schools. The greatest percentage of television programs for closed circuit transmission originate in classrooms, rather than in central studio facilities.

In elementary schools, secondary schools and colleges it has been reported that science and language arts are the most common subjects in television curricula.

The NEA document suggests that there is a growing trend toward planning CCTV facilities as part of integrated audio visual systems, in which television, teaching machines, program texts, language laboratories and other tools are combined in single automated teaching systems. As far as television itself is concerned, a survey by Stanford University Institute for Communications Research suggests that by 1971 every major school, college, and university in the country will have at least one closed circuit television system. This judgment may not be conservative, but it does indicate that the future of closed circuit television in education is assured. As a matter of fact, signs of the impending growth prevail: requests for information on equipment and personnel--as well as on techniques for efficient use--appear more and more regularly at the offices of the NEA, the NAEB, the Joint Council on Educational Broadcasting, various industrial concerns and other agencies to which educators often turn for advice in matters of audio visual systems.

The New York Times estimated last December that 3.5 million students are taking television courses for academic credits, and that an additional 5.5 million use ETV for supplementary instruction. We have been unable to determine their source, but the Times' reputation is such that we can take the figures with some confidence. The numbers are not necessarily critical, since quality of instruction is certainly more vital than numbers of students, but we should certainly note that as an increasing number of students become accustomed to television in the classroom, the role and the responsibility of the educational broadcaster in formal education will increase, and curricular adjustments will soon be necessary in the training of teachers.

EDUCATIONAL TELEVISION STATIONS

Information concerning educational television stations is more easily obtained than that concerning closed circuit installations. At the time of your first seminar, 350 channels were reserved for educational use, of which a little over 80 were activated. A new table of assignments was adopted on June 4th of this year by the FCC, and on the new table 630 channels are reserved for noncommercial educational use. Of this number, 517 are in the UHF band and 113 are VHF channels. There are 102 educational television stations on the air at this time, though the figure seems to change almost daily. Sixty of these are VHF stations, and 42 are in the UHF band: 95 of them are operating on frequencies reserved specifically for educational stations. Fifty per cent of the VHF stations reserved for education have been activated, compared to 18% for the UHF reservations. The All-Channel Receiver Act, making it mandatory for manufacturers to include UHF receiving capability in their television sets, is only beginning to have its impact on broadcasting. Because of the Act, predictions are that an increasing number of smaller UHF educational stations will be activated during these next few years.

One observer, as reported in the publication titled Bench Marks '64, estimated in 1963 that there would be 300 ETV stations on the air by 1966; another participant at the seminar agreed with him. At this time, we can say that they may have been a little optimistic, but the growth they foresaw continues to be steady and consistent. Estimates now are that the number of ETV stations on the air will double within the next five years.

Most major markets in the United States now have at least one educational television station. As more program libraries are developed, and as interconnection seems more and more practical, the smaller communities are likely to activate their reserved frequencies.

There are basically four types of ETV station owners: (1) those licensed to non-profit corporations formed specifically for educational television are called "community" stations; (2) those licensed to colleges and universities, whether public or private, are "university" stations; (3) those licensed to state agencies (Boards of Regents, state ETV Authorities, etc.), are called "state" stations; and (4) those licensed to local boards of education or public schools are called "school" stations. The division of stations among these four categories is not new, though there are some who argue that such a division is misleading. Nevertheless, there are distinct operational and financial differences to be observed with this grouping.

There is an increasing interest on the part of educators and broadcasters in the development of regional networks and exchange libraries for educational television stations. These are the two basic systems for program distribution in educational television. Networks allow many "member" stations to use common programs. If the stations are interconnected, the programs can be simultaneously broadcast with origination at only one station; if the stations are not interconnected the programs have to be taped or filmed and mailed from one location to another.

Exchange libraries are storage and distribution centers for video tapes and film, though libraries sometimes function in part as information centers or informal "brokers" for tapes and films available across the country.

Three ETV station networks exist, though actual interconnection among their stations is to some degree not yet accomplished. Affiliates of the National Educational Television and Radio Center make up a national tape network, which uses the mails as a distribution system. Tapes are mailed to affiliates for local broadcasting.

Two regional networks are in operation, though only one of them, the Eastern Educational Network, involves interconnection that crosses state lines. Fourteen stations are affiliates of the EEN, and half of them are interconnected. The member stations, which support the operation, stretch from Washington, D. C., to Maine and westward to the Ohio border.

The other network is incorporated as Midwestern Educational Television. Its headquarters are in Minneapolis and its goal is the actual interconnection of stations in six states. While working toward that end, MET provides a program exchange service, enabling its stations to use recorded programs. MET is supported by annual fees paid by the member stations, foundation grants and special assessments for unique projects.

Several states have developed educational television networks, some of which involve extensive interconnections. A new association of state educational television commissions and other official agencies has been formed, which is an indication of the growing interest on the part of state governments in noncommercial television.

Three libraries have been developed for the distribution of instructional programs. All of them were started as projects supported by Title VII of the National Defense Education Act. One is operated in cooperation with the Eastern Educational Network with headquarters in Boston, and another at the University of Nebraska. Both have active instructional program exchange services, and both depend on outside support.

The National Center for School and College Television recently moved to Indiana University from New York City, where it was called the National Instructional Television Library.

The Educational Television Stations Program Service, which will distribute educational programs of general interest, will start its first year of operation in September of this year with headquarters also at Indiana University. These program centers are vital to educational broadcasting, and we can undoubtedly look forward to greater numbers of regional and national program libraries.

Of particular interest this year was a study conducted by the Educational Television Stations division of the NAEB in cooperation with the United States Office of Education. For the first time in the history of ETV, information was collected from all operating ETV stations on financing patterns.

The following is a brief summary of patterns among educational television stations as reflected by the study:

a) The average station is on the air between nine and ten hours a day, and a little more than five days a week.

b) School stations emphasize classroom television to the extent that more than 60% of their programming is of a direct instructional nature. Most stations devote a little less than one-half of on-the-air time to in-school broadcasting.

c) There are 2,445 people employed by 95 educational television stations on full time basis, with 1,199 working part time. The average station employs about 26 people full time. University stations tend to make greater use of part time help than do other types of stations.

d) Most educational television stations, after several years, have investments of between $400,000 and $500,000 each in broadcast properties. Community stations tend to own more property than do other types of stations.

e) More than half of the money ETV stations receive comes from direct budgeted support--money budgeted each year by a parent organization. A little less than one fourth of the income realized by ETV stations comes from gifts and donations, with approximately the same amount coming from services rendered by the stations.

f) Community stations show the highest percentage of money earned through services or gifts; state stations are supported directly by state taxes for 95¢ out of every dollar, and earn very little money through contract services.

g) Average ETV station income, regardless of ownership, is $368,000 per year. Community and state stations tend to operate on larger budgets than school and university stations.

h) Station incomes range from less than $50,000 to $2,500,000. Community stations are more predominate in the higher income groups, while university stations tend to be found among the stations with lower budgets. However, a full 50% of the community stations report that their expenses are greater than their incomes. Of the other varieties, only school stations have no reports of such situations.

i) 17% of all stations operate on less than $100,000 per year, and 39% on less than $200,000.

j) 3¢ out of every dollar expended by educational television stations is used for procurement of programs from outside sources. 44¢ is spent for salaries, and 25¢ for engineering supplies and equipment.

As you have probably seen, current developments in instructional broadcasting deal mainly with growth, and the solutions to problems created by that growth. Every indication is that greater and more rapid expansion is to be expected during the next number of years.

SUMMARY

There are approximately 800 closed circuit television systems operating today, with twice that number expected within five years. There are 102 educational television stations broadcasting today, and that number is also expected to double by 1970.

The current issues in educational television are programming and financial stability. We can expect an increase in the number of programming and distribution centers soon, and before long we should have a stable financial system for noncommercial television broadcasting.

I believe we shall soon see new systems and new patterns in American education. We must concentrate if we are to be equal to our own technology.

APPLICATIONS OF TELEVISION TECHNOLOGY: PRESENT AND FUTURE

By
Robert L. Hilliard
Chief, Educational Broadcasting Branch
Federal Communications Commission

Sitting on the other end of that educational log is not only uncomfortable, but has become largely unnecessary. Education has changed since the time of Mark Hopkins, just as it changed from the rigid lecture approach that marked the early development of popular education to his recognition of the special needs of the individual student. With the development of communications media that can reach one and many at the same time, face-to-face confrontation between the teacher and student alone is not necessarily the only means for most effective education.

True, the situation in which an excellent teacher can work directly with the pupil is still and, I hope, will always be most desirable and, as much as possible, attainable. But where it cannot be achieved, it is much more desirable to give the student the opportunity to have some relationship to the excellent teacher and to the visual and aural experiences that might reinforce what that teacher presents, than to limit the student to a mediocre instructor with mediocre facilities simply because recent tradition suggests there must be something magical about sitting on the other end of that log, whether the student really learns something or not.

The true revolution in education is, in a sense, a physical one that has affected the psychological, philosophical and administrative aspects of teaching and learning. Education is not, cannot be and should not be limited any longer to the four walls of the classroom. The new communications media have brought the world into the classroom, have taken the student out into the world, have led the adult population into the milieu of education, and have brought the schools into the homes of the community. One of, if not the most effective means in this educational revolution has been television.

To those who have watched, studied, or participated in the development of educational television--or, more accurately, television in education--during the past decade, including uncountable research studies, millions of dollars of grants and contracts from public and private sources, and continually growing dissemination projects, it is somehow incredible to hear an educator today ask, "Should I use television?" We are past the "should" stage; the proper question now is, "How should I use television?"

We are presuming that, as an educational administrator, you have already concluded that someplace, in some curricular or co-curricular area in the classroom or school or system for which you are responsible, there is something that you would like a little more effectively presented, a little more effectively learned. Your immediate task, in determining how best to use television, is to identify the specific need.

Do you need an entire course? For example, are you lacking a teacher who can teach French to your fourth grade pupils? Or are you lacking an instructor who can teach Chinese as a sophomore elective in college?

Do you need a demonstration? A part of a course? Do you lack the proper equipment to clearly delineate for your fifth grade class exactly what is the atom? Are you uncertain whether your high school senior English class properly understands the lectures by the regular classroom teacher on epic theatre and the theatre of the absurd?

Do you need reinforcement materials? Has hardly anyone in the first three grades in your elementary school located in an economically deprived area of your city ever seen a cow, a giraffe, a llama? Have the members of your college class in modern history ever seen, live and complete, a session of the United Nations? How many of your students, at whatever level, have seen a professional ballet, opera, theatre company?

Do you need materials that will reach the adults in their homes, thus validating the term "extension" sometimes applied to one of your offices or departments? Do you need materials in guidance, the arts, therapy, citizenship participation that your students otherwise would not get? Do you need to exchange library materials, processing and registration data, administrative techniques in a quicker, less costly, more frequent manner? Do you need an improvement in quantity and quality of in-service education? Are you concerned with providing post-graduate information and education to professionals unable to leave their posts to visit a four-walls-classroom location?

We can go on and on, with literally hundreds of specific illustrations. But let us assume that your own needs, in any individual case, can be pin-pointed to a few areas of urgent concern.

Once you have decided what materials you need to obtain for your students, through television, then you can begin to determine the distribution, origination and, in turn, the physical and technical facilities needed.

At this point we come to some special considerations that provide further meaning to the title of this meeting, "The Uses of Television in Education for the Next Decade," and the title given me for my presentation: "Applications of Television Technology: Present and Future." I am considering technology here in its broad sense--the total picture of man-made invention for the service of man's needs--and not in the narrow sense of specific mechanical or electronic instruments.

We can no longer, even today, and certainly not tomorrow, speak of educational television as an open-circuit station sending a picture into a classroom or into a home. Open-circuit channels are only part of the whole television-in-education picture. We must consider, as well, closed circuit television; the Instructional Television Fixed Service or 2500 megacycle system, the proposed low-power community UHF station; the storage and retrieval advantages of television technology; Community Antenna Television systems; translators; and though we are dealing here with television, I urge you not to forget that radio continues to provide a basic, economic, flexible, vital means for educational communications and should be considered prominently in the totality of our audio visual planning; and the relationships of all of these to each other.

There is no rule that can tell you what particular phase of television technology to use for any given circumstance. In any situation, a number of variables must be taken into consideration. Essentially, there are four areas for you to analyze: origination, distribution, storage and retrieval, and reception. You must apply all of these factors to the particular curricular need. For example, if you wish to exchange reinforcement materials for a given course with several other institutions in your area, you would determine whether you wish to set up a 2500 megacycle service, to develop a closed circuit network, to exchange tapes for distribution over your individual internal closed circuit systems, or to try a team-teaching approach on your local open-circuit ETV station. In many instances the administrative control of the schools--that is, whether they were of the same school system--would be a factor in determination. The differences in levels, if any, would be considered. Would the materials originate at a central broadcasting or recording point, or would they be prepared in studios at the individual institutions? Would the completed materials be utilized all at the same time, or would they have to be stored for subsequent appropriately scheduled distribution? Would distribution be over broadcast facilities, such as the I.T.F.S., requiring a video tape recorder stabilized for broadcast purposes? Or would it be over closed circuit facilities, permitting use of a VTR of lesser cost? Will there be ultimate further distribution of these materials to other institutions? Through CATV systems? Through a VHF or UHF broadcast station? With the aid of a translator? By tapes through the mail? Through multi-channel 2500 megacycle systems? Will the originating institutions require full production equipment? Will they need to jointly invest in a broadcast system? Will their classrooms be able to use out-of-date home receivers with VHF channels only, because a CATV system has translated all signals to channels 2-13? Will all-channel receivers be required? Will special antenna and converter be required because the receiving institution is part of a 2500 megacycle system?

I suspect that one really needs a computer to handle all the variables involved in trying to set any consistent patterns for decisions. And, indeed, the combination of computers and television in instruction is a new development in educational technology that is a further variable to be fed into the computer. And can even the most human--I avoid the word humane--of computers be able to make the artistic, aesthetic and intuitive judgments concerning the personality of the studio teacher, the creativity of the studio director, the insight of the curriculum coordinator, the enthusiasm and adaptability of the classroom teacher?

And, flowing through all of these considerations is the primary one to which all other decisions are directed: the specific needs of the specific student in the specific class!

What we can offer then, at this point, is a description of some of television's uses. And at that point you are on your administrative own, interpreting and applying within the context of the need as you have analyzed it. But we do not say that this must be a spartan-like individual decision devoid of help from any source. Indeed, if you are contemplating the use of any facility licensed by the Federal Communications Commission I would be among the first to advise you to consider seeking the consulting services of an engineer and an attorney experienced in the communications field.

Let us briefly examine some of the areas of educational technology currently in use.

1. First there is open circuit broadcasting, represented by the ETV station itself. In a sense, the terms broadcasting and open circuit are mutually redundent, because broadcasting means the dissemination of communications to be received by the public, either directly or through the mediation of a relay station. So broadcasting is, in its very nature, open circuit. Of course, some broadcasting may be aimed at a specific audience, some at a general audience.

   At the present time, August 23, 1965, there are 102 educational television stations on the air, with the expectation of ten more in operation by the end of the year. Of those now on the air, 60 are VHF stations and 42 UHF; during the past few years, however, with the growth of UHF potentials, about two-thirds of the new ETV licenses and construction permits have been for UHF stations. Channel availability and reservation of channels for education by the Federal Communications Commission are determining factors as to whether you would activate a "V" or a "U." If your service is to be predominantly cultural, a "V" will, at the present time, have more audience potential. But with all-channel legislation now over a year old, it is expected that virtually all homes will be able to receive UHF stations in about five years. For primarily in-school or instructional service to a select, motivated audience, even at the present time, there is substantially no difference between a "U" and a "V."

   It has been believed, with some validity, that a "U" channel is more desirable. In fact, the VHF wavelength is longer and capable of bending in an easier manner around some obstacle without appreciably reducing its signal strength. Because UHF wavelength is shorter, it doesn't travel quite so far. However, it is also fact that with proper siting the UHF signal can be as effective or even more so than a VHF signal. With continued improvements in receivers, it should make no difference to you whether your ETV station operates on a UHF or VHF channel. There is one fallacy that has become popular among some educators, and that is that a low numbered UHF channel is infinitely more preferable to a high numbered one. The FCC engineers tell us that there is usually no significant difference, other factors being equal, between a low numbered and high numbered channel. In fact, in some instances a high numbered channel may be preferable. There have been some complaints that the recently issued FCC allocations table seems to designate high channels for ETV while saving low channels for commercial television. Actually, this is not so, and in the development of the table we used no such pattern. But more important is the fact that some educators think that this is important, even if it were true. It is not. Your local conditions for transmission are the significant points to consider.

Applying for an ETV channel is relatively simple. First, you would determine if a reserved channel has been allocated to your city. If not, you would petition the FCC to drop one in. The new allocations table is deliberately non-saturated and flexible so that we can ultimately add more ETV channels much more easily than if we had issued a saturated table. We are concerned not only with the present needs of education, but are looking ahead to the future needs, providing room for even unexpected expansion. Once you have a channel available, you apply for a construction permit. This application is studied for engineering, legal and financial qualifications. At the same time, if you are eligible for a grant under the Educational Television Facilities Act of 1962, you would file an application for such matching funds with the Department of Health, Education, and Welfare. HEW and FCC finish processing about the same time, and we closely coordinate our work and judgments on the applications. Upon issuance of a construction permit and, assuming you have qualified, HEW funds, you begin to build your station, eventually get to the point where you request program test authority from the FCC and, to all intents and purposes, you are then on the air. Receiving your actual license is then a relatively simple matter.

2. The Instructional Television Fixed Service is less than two years old. This new service uses channels 2500 through 2690 megacycles and combines the low cost economy of closed circuit with the ability to radiate through space like broadcasting. In effect, it is broadcasting, and only the cost of a special antenna and converter prevent any home from picking up the signal. The moderate extra cost of this receiving equipment and the specialized nature of the broadcast material, however, limit it for practical purposes to educational institutions or reception centers. The I.T.F.S. is not in any way considered a substitute for open circuit ETV. It is, instead, an additional means for expanding and deepening education. It transmits visual and aural instructional materials from a central source to a relatively limited number of fixed receiving points. It is not a cultural service. It is not intended at present for home use. Its special value, besides economy of operation, is the availability, at present, of five channels to a licensee. These may be programmed simultaneously, permitting five different programs of different subject matter to come into your school at the same time, to be distributed on five different channels. What this does, then, is obviate the scheduling program inherent in open circuit instructional broadcasting. The 2500 megacycle system, as it is frequently called, is ideal for the exchange of instructional materials among a limited number of institutions in a school system,

a city or a region. There are at the present time six such systems on the air and some 45 additional construction permits granted for about 150 channels. Applications are studied and processed in much the same way as are broadcast applications, but they are not as complex.

3. Translators refer to stations which translate or change the frequency of a broadcast into another frequency that can be retransmitted and received by the public in an area too far to receive the signal of the originating station. Many school districts apply to the FCC for permission to construct a translator to receive the signal of a primary station for instructional purposes. Many ETV stations operate their own translators in order to boost their signals into outlying areas for both school and community programming. Translator applications are studied and processed by the Commission in much the same way as are broadcast applications.

4. CATV stands for Community Antenna Television. These are cable systems which pick up TV signals either through wire or microwave and place it on cables to homes in a given community which, for reasons of terrain or otherwise, would not be able to pick up that particular signal with as much clarity, if at all. The Federal Communications Commission has issued a notice of inquiry and proposed rule-making in which it asserts regulation over CATV systems, but has requested comments and guidance in determining many of specifics of such jurisdiction. Duplication of local live signals and time-lapse in carrying programs are among the issues being studied. In general, CATV has aided education by bringing ETV signals into schools and areas where they could not otherwise be received. On the other hand, many educational broadcasters are concerned that the bringing in of a distant ETV station into a community or school system might result in withdrawal of support for the local or nearby ETV station, thus removing the locally developed instructional programs designed to fit the specific needs of the students and adults in the given community.

5. Low power community UHF stations have been proposed by the FCC. Under this plan, channels 70-83 would be reserved for community TV stations with maximum power of 10kw ERP and maximum antenna height of 300 feet. Such stations could be activated by any educational or civic organization that wished to serve a limited geographical area, wished to serve both schools and homes (thus making 2500 megacycles as currently constituted impractical), and did not wish to make the investment necessary for a regular high power ETV station. This kind of station might make a special contribution in metropolitan areas where channel saturation has already taken place and where the service is to be oriented toward a highly concentrated special audience.

6. Closed circuit television is perhaps most familiar to many of you. There are approximately 1000 closed circuit TV installations in the country in educational institutions of various kinds, not counting hundreds more in military and business facilities. These systems

range from a single camera in one lab or classroom for magnification purposes to extensive multi-channeled systems serving an entire campus or a school system--such as Hagerstown, Maryland, situation where the closed circuit system brings together schools in two counties. In some cases, such as in South Carolina and Delaware, entire state systems are served by closed circuit. The FCC has no jurisdiction over closed circuit television insofar as it does not involve broadcast frequencies.

In the next ten years more and more will these technological manifestations of television be used less and less alone. Even now we have them in combination, where an ETV broadcast signal may be transmitted by a translator or I.T.F.S. system or CATV system, recorded, stored, then redistributed at a future time over a closed circuit facility. And television as an individual medium and in its various parts is being used less and less separately, but in combination with other aural and visual techniques.

Where do these descriptions, these words leave you, then, in terms of your own decisions on technology? In terms of equipment, exactly where you were before: in the hands of an expert, either yourself if your background and exposure permit it, or a consultant. But we are not discussing equipment--equipment can be filled in later as part of the technological whole. We are concerned with the utilization of this magic miracle, television. Some 35 years ago, before television had appeared on the public horizon, Gilbert Seldes prognosticated that in the commercial field television would be a magic miracle made for money. In our case, by design and, perhaps perforce, it is made for education.

So there you have the overt manifestations of today's technology of television. What they will be like ten years from now is anybody's guess.

Perhaps some will be substantially the same. Perhaps some will have disappeared almost entirely, obsolete in a field that changes with each new day. Perhaps some will have taken adjunctive, secondary roles to such communications technology as satellite networks connecting educational institutions all over the world, and laser beams carrying volumes more of materials more efficiently than our current devices. The exact technological means we do not know. But there are some things we can know. We can know the kinds of results possible for education. We can know the kinds of educational relationships possible.

We can look forward to--we can achieve, all of you here willing--within the next ten years, a learning situation where every student--pre-school, elementary, secondary, college, professional, adult--in the classroom, in the home, in the community center, in the dormitory room, at work--will have at his or her fingertips every learning resource--teacher, experiment, demonstration, lecture, interview, observation, artifact, any visual or aural experience--any place in the entire world.

What Picasso knew in art several decades ago when he developed the philosophical concept of a compression and many sided view of time and space, we in education have only in the relatively recent past begun to comprehend. We are no longer stockaded frontier settlements, protecting and developing in our own limited image; but through the remarkably fast-moving advances in mass communications and mass transportation, we are irrevocably bound in ultimate interest to all other institutions and to all other peoples. Educators must no longer have any doubt, as they prepare to teach their students, that there is a universality of understanding that was always necessary but heretofore largely unattainable; that this universality is now attainable and without which the modern fortress is as vulnerable as would be today the log and mud pioneer stockades of our forefathers.

We have come to a time of indivisibility of values. We cannot have values unto ourselves except as we make them universally available for all mankind. We cannot pretend to offer quality education in a great university here in Chicago and not share it with colleges and universities in every other part of the state--and the region--and the nation--and the world. If we are truly committed to the values we say we believe in, then we must be prepared to take that action that will achieve as universally as possible the goals that we set for ourselves in our own limited spheres of impact. We must be prepared to bring the best, the most thorough, the most enlightened education not only to students in an elementary school in a high income, socially prominent neighborhood in one of our affluent towns, but exactly the same standard of education--if, indeed, it is the best--to the most economically deprived ghettoed schools of our large cities, and to the poorest tenant farmer's shack on a dirt road in a southern rural area.

We have the potential now to achieve in less than a decade a great multi-university, to achieve a great multi-school, in our school district, in our city, in our regional and on any scale we wish.

When the first satellite orbited the earth, was there any doubt in any educator's mind that as soon as possible education would have its own satellite for intercommunication in this country, and not too long afterward share satellites with other countries for world wide exchange of teaching and learning? This step was obvious, simple and necessary, and today, in 1965, any person who really believes he is an educator should be spending some part of his time every week working with those organizations, at least on his own local level, to achieve this goal in the near future.

When we first learned of the discovery of the Maser or Laser less than a decade ago, was there any educator who should not immediately have set his thinking a decade ahead for the time when a thousand different television channels could be sent on a laser beam at the same time, providing countless educational resources from distant places to his students, serving their individual needs almost at will? And the present combination of satellites and lasers open up even further potentials for the extension and improvement of education to all.

And this is the core: to all and to one. For what we are able to do with television is meet not only mass needs with a mass medium, but, most important, meet more precisely the individual need. We can provide, if we wish, exactly the kind and pace of education needed by a given student on the exact level for his specific capacity of learning at a given moment. And this, after all, is the reason for any and all of our work in educational philosophy, organization and practice. In achieving the potentials that are at hand and near at hand and in the future, we must keep in mind that television is not a whole in itself, but part of the whole. It must be integrated and coordinated with a variety of devices that, taken together, provide the most effective motivating and learning situation for the student. At the present time such teaching machine complexes are in their infancy. Oh, they do exist. And, yes, any of you here who wish to improve the quality of education and learning for your students with these devices could use them, if you had the budget. But, as education always is, we have been slow to adopt new methods. Many weren't readily disposed to accept books several centuries ago, because books were clearly no substitute for mouth-to-ear learning. But in our next decade every institution of higher education deserving of the name will have equipped every dormitory room with a technology complex for every student, where teaching machines, audio devices, television and other instructional aids will permit him to retrieve library information in a twinkling, to review a class lecture, to participate in a discussion, to drill with memory materials, to test, to analyze, to think and to learn more quickly, effectively and efficiently than he is now doing. An educational administrator who wishes to do more than peek over the transom into the next decade will do his best to see to it that every pupil in his elementary and secondary school will have access to the same devices in special learning laboratories. And every Dean of Extension will see that special learning centers in appropriate places in urban and rural areas will contain such complexes.

The potentials for the improvement of learning are not someplace in the middle of the next decade. They are here now. Not to use them now is to deliberately push education deeper into the cultural lag. And what about ten years from now? We must now begin planning for the utilization of technology that is not yet even invented. If we wait, we will be as we are today, a decade behind the potentials for quality teaching and learning.

As educators, we must take a hard look at where we are today and ask ourselves a hard question: are our administrative procedures and organization designed to serve the needs of the students, or are the students being fit into the mold of our own administrative ease and manageability.

We have come to a new street, to a new city, and behind us, in the land of education, lies only the swirling sands of the desert. We cannot go back. Nor can we stand still, for the sands are covering our tracks and, in its more formal guise, the cultural lag, will swiftly cover us. A new world--perhaps in every decade ever new--has provided us not only with a challenge, but with responsibility and duty. President Johnson has stated that "the quality and quantity of our education effort should be stepped up at all levels in an effort to help persons attain the background they need." And our late President Kennedy expressed our desire and need in a simplicity that provides its own eloquence. He said: "Let us think of education as the means of developing our greatest abilities, because in each of us there is a private hope and dream, which fulfilled, can be translated into benefit for everyone and greater strength for our nation."

SOME CROSS-MEDIA CONCERNS

By
C. Walter Stone, Director of University Libraries,
University of Pittsburgh

Usually, I am professionally an optimist. Today, I feel it would be constructive to be pessimistic and even to exaggerate a little for purposes of emphasis.

Fifteen or sixteen years ago I wrote a small piece for a library journal advocating cross-media approaches to instruction. By cross-media approaches, I meant _a unified subject or problem approach_ which could take advantage of the unique capacities for presentation of various media available. Not long after the piece appeared, an excerpt was picked up which was framed in a black box and published, if I recall correctly, by _Film World_ magazine.

I don't remember now the exact words, but the box was so captioned that the author's absurdity was apparent for all to see!

Today, the cross-media idea is so much a part of our way of thinking about desirable instructional practice that it seems almost a little "quaint" to single the idea out for attention in a seminar discussion. However, there is a difference between acceptance of an idea and its implementation. From my point of view, the ideal cross-media approach to instruction remains a long way from realization. Here are a few uncertainties and problems which may be standing in the way:

1. _Some theoretical questions_--Most of those who are directly concerned with applying audio visual media to instruction have in the past been strongly wedded to the notion that simultaneous sound and sight presentations of a multi-media nature offer basic advantages to learning (and, of course, this idea has had certain very obvious commercial results). However, reports issued during the past year by Robert Travers (and confirmed by other psychologists) suggest that new thinking may have to be done about the ways in which communication and learning take place. For example, multi-sensory perception isn't always the best perception. Indeed, it becomes easy to block effective communication when too many channels are used at one time. I am _not_ saying that when several media are used for instruction and when there has been taken adequately into account the unique advantages for presentation which each enjoys, efficient learning may not accrue. What I do suggest is that all of the

answers are not yet "in" regarding optimum use of cross-media approaches to learning. More study is needed--and new theories may be required on which to base sounder designs for teaching and study and related materials and equipment involving multi-media approaches.

2. Our hardware problem--We are, I think, plagued in New York, Los Angeles, Chicago and Washington, D. C., by too much irresponsible encouragement of production and merchandising for instructional use of an amazing variety of gimmicks and gadgets designed to achieve multi-media presentations. There are the tape recorders combined with 2 x 2 slide projectors and both of these mixed with filmstrip units; overhead projectors in desks, etc. Other equipment includes such modifications as control buttons added to facilitate use of programmed instructional approaches to what may be heard and displayed visually.

   The vast array of devices now on the market--added to many more still on the drawing board--is both weird and wonderful. Certainly, the technology is imaginative and potentially very valuable. But it can also be damaging to educational stability.

   Without wishing to stifle any truly creative persons or institutions, the economics of instructional technology as well as the stability of our educational enterprise requires more deliberate pacing of future development in this area, greater degrees of standardization, and development of some new patterns for production and distribution of instructional hardware in a manner which will both enable present systems of enterprise operating in the field to function successfully and avoid harm to education. The rate of change in this field has accelerated to the degree that now whatever we purchase is virtually obsolete before it is put to use; our range of choice of instructional hardware has moved beyond capacities to make intelligent selections. Thus, while instructional technology has prospered, thanks to the infusion of large numbers of federal and foundation dollars, our rate of gain in educational quality could actually fall behind.

3. The materials problem--One can't talk about hardware without discussing materials--i.e., the tests, films, filmstrips, slides and tapes, new programmed instructional aids developed in various forms and formats, e.g., 8mm single concept loop films, three-dimensional picture sets, overlay transparencies and kits. Several points should be made respecting materials for instruction. As in the case of hardware, there are numerous inefficiencies--economic and otherwise--represented in our current arrangements for their production and distribution. We need new noncommercial agencies geared to production for smaller markets. In this area we also suffer a lack of personnel trained to think and develop resources in cross-media terms. Despite the relatively large number of new educational kits, so called, for media systems now being devised and marketed commercially, sound cross-media approaches to instruction are all too few. While the notion

of "conceptual interlock" is highly touted as a goal for the preparation of such materials, the desire to be able to market separately each unit which a kit may include frequently blocks real achievement of this ideal.

Also relating to materials is the problem of indexing and control--bibliographic control--if I can put it that way. Until publication of the Educational Media Index, it was very difficult indeed for librarians, audio visual personnel and teachers to be successful in thinking about curriculum planning and about instructional problems involving materials on a cross-media base. The Index, already useful in an experimental edition, is expected in a second revised version to be prepared next year to become our major national guide to learning resources. In the past, the lack of such a tool has been seriously debilitating.

4. The training problem--Related to all problems stated thus far is the critical shortage in our field of specialists trained to work in education on a cross-media basis. A majority of specialists working in the field gained their early professional education (or its equivalent) in terms of the products they were to produce rather than receiving an education oriented to classes of specific educational objectives. Therefore, we have the film specialists, the broadcasters, the filmstrip men, recording personnel and the like.

   The requirements of the future suggest that we can't hope to make optimum use of modern communications technology for educational purposes without refocusing our goals for recruiting and training personnel. In the future, professional education programs must be designed to include much more in the way of preparation for management of multi- and cross-media knowledges and skills.

   Having shared responsibility for a study completed recently in Western Pennsylvania under a Title VII grant and concerning the availability of media manpower, I am persuaded there is little hope for significant educational innovation through the use of media until a major restructuring of the media service enterprise takes place in our schools and colleges and, most importantly, in related training programs.

5. The distribution problem--Finally, for purposes of this listing, is that cluster of problems relating to distribution and use of educational resources where cross-media instructional objectives are involved. The simple facts are that we do not have student or faculty groups well trained for optimum use of media. In most cases we do not have the necessary administrative arrangements essential even for simple procurement and sharing of motion pictures when needed, not to mention multi-media presentations. The idea we have, yes! But our reality leaves much to be desired.

What have these several problems to do with television and what may be our hopes for the future?

From my point of view, first--educational television should be thought of less as an institution in itself and more as a kind of "Waring blender" or as an educational "Mixmaster" having unique capacities for integrated presentation of all communications media.

Next, since television also affords unique facilities for distributing educational presentations and extending their reach, it should in a second sense be studied for its capabilities both to decentralize the locus of educational opportunity and/or to bring together individuals and groups for the sharing of common educational experience, thus centralizing both control and distribution functions.

These two sets of capacities are the chief assets television provides for education and they are acknowledged within the educational community. No self-respecting school, college, larger library or other educational or cultural agency now developing major plans for new facilities and services will fail to incorporate at least the rudiments of a space allowance, provision of needed conduit and electrical connections necessary to make use of TV, as well as _avant garde_ accessories including telefacsimile transmission, audience response mechanisms, electronic writing devices and information retrieval systems, etc.

Television is a unique _cross-media mixer_ and a carrier for educational instruction--that's what it amounts to. Like air conditioning, luminous ceilings and modern furniture, I think from here on its physical presence can be assumed. But effective use of television is something else, so here are a few predictions covering the next ten years which relate both to the growth of television and to cross-media developments in methods of instruction:

1. _Education will adopt a new philosophy of instruction involving use of the systems approach_:

   Embracing, but including much more than cross-media objectives, the systems approach in education takes into account the full range, nature and intensity of interrelationships of all the components involved in teaching and learning including men, machines and media as well as the nature of those concepts and skills with which a given instructional procedure may be concerned. In systems thinking, the base of the educational concern shifts away from materials and equipment problems as such to specific behavioral changes which may be obtained. (Parenthetically, a weakness in the whole argument for systems is that it does assume the availability of a very full range of modern instructional technology, an evident fallacy for some time to come.) Nonetheless, it's my guess, and it takes no particular wisdom or courage to make the prediction, that educational planning for the future will be grounded in major ways in systems design and in related analytic procedures.

2. Educational Technology will continue its advance:

   Communications technology applied to instruction will forge ahead at an accelerating pace. Three-dimensional photography and television, already with us experimentally, will undoubtedly be perfected for general educational markets. Supported experimentally by poverty, job corps and manpower retraining programs, many more technical innovations will be refined and revamped for regular school and college adaptation, finding their way into practice as have instructional innovations developed earlier in business and industry and within the defense establishment.

   New multi-media presentation rooms and systems are being installed in all state-supported colleges of New York. TV programmed instruction has been tested at UCLA and should be aired publicly very soon in Washington, D. C. Eight mm. cartridges with sound are already with us. The benefits of video tape are being translated across the country into self-reviewing and guidance aids for teachers to see themselves as others see them and to learn from this experience. I understand that at Purdue "Mirror TV" is the code name for one such project.

3. Educational media service agencies will develop having new administrative configurations, responsibilities and mechanisms for support:

   In American schools and colleges, the day of separate AV service, textbook agencies, photographic units, libraries, etc., is ending. The communication and information service center is at hand. Despite what I happen to regard as the failures of Miami, Florida Atlantic University, and others (failures caused by too little real support, too much emphasis on facilities and equipment, and not enough on specific instructional purposes, people, and the educational understanding)--the economies, efficiency and instructional and research requirements of education are such that new comprehensive media service programs must be established.

   Further, our costs and shortages generally being what they are in education, I believe we should establish on a regional basis--serving various levels and types of educational enterprise--many new media service centers which can provide contractually, as TV stations have for years, a range of media assistance in the form of production work, storage and distributive services, in-service training and record keeping including data-processing functions. When inter-connected with other similar centers, such agencies may form educational service networks, a premise which underlies some work now being done by Intercom (a new organization which has grown out of interests in sharing medical data among several universities to become a national program for study and development of educational communication network service possibilities ranging from transfer of library information to direct, computer-based instruction).

   Several years ago, a pilot model for such a center was developed for a multi-county area on Long Island by Mr. Jack Tanzman. Other models have since been proposed in many parts of the country.

In my view, some such regional service units may well be established as new types of educational authorities with funds received from various sources. Institutions participating will have board representation and appropriate state or multi-state sanctions may be given when necessary to the operations, as for example, is the case with ITV libraries operating as non-profit corporations, or with the Instructional Materials Centers in Pennsylvania, which are supported by state government dollars but function on a county basis. (It seems to me that Title II support would also be a possibility under the new Elementary and Secondary Education Act.)

Not the least important function of such centers will be their production efforts. By no stretch of the imagination can purely local services do the job needed for production of new learning resources. Commercial agencies often cannot afford the relatively small markets entailed. Regional production services would appear to give an answer to the demand for more materials.

4. Finally, respecting television, I believe that excepting the conduct of operations on a very technical level, TV as a discreet area of professional interest and concern within education will give way increasingly to broader programs of educational communication service, one chief concern of which will be the application of systems approaches to instruction.

   Such lines are already being crossed. One example of this is present in the joint membership offered by DAVI and NAEB. And in new training programs now coming along, cross-media approaches are the rule for preparation of generalists to supervise production, distribution services, counselling and training of teachers and students for media use, research and evaluation, and the harnessing of modern computer technology.

To conclude, regarding these four predictions, and, indeed, the full statement, cross-media developments in education are full of promise. But their realization is limited. A key restricting factor has been that caused by lack of bibliographic and physical accessibility as well as unprepared personnel. Our technological future is bright. But our service future depends, it seems to me, upon adoption of some new designs for planning and administration, which seem to involve at least these things:

--A new philosophy keyed to use of a systems approach

--More intelligent control of our technical advance

--Creation of new service programs with new authority and responsibilities

--Acceptance of new points of view regarding media service personnel and the place of TV within the profession.

TEACHER EDUCATION FOR THE FUTURE

By
Desmond P. Wedberg, Associate Director
Teacher Education and Media Project
American Association of Colleges for Teacher Education

It is a pleasure to address this seminar today as a representative of the Teacher Education and Media Project of the American Association of Colleges for Teacher Education, and it is especially timely in that within one week we will be phasing out the Media Component of the TEAM Project. For the past two years we have been attempting to gather data to assess the impact of instructional technology on teacher education. My remarks today will attempt to view where we are with the newer media in teacher education, where we may be going in the decade ahead, and what are the barriers that may slow, or even inhibit, television and other new media innovations in my field.

Evidence of the scope and quality of new media utilization in teacher education programs has been gathered by the project staff through a survey of colleges and universities, to be published later this year by the AACTE as The Impact of Instructional Technology on Teacher Education, and through some 40 field visits to colleges and universities that prepare teachers at the pre-service level.

As might be predicted, the scope of new media utilization in teacher education is consistent with national patterns in elementary and secondary schools. Sound films and filmstrips are the overwhelming choice, followed by disc and tape recordings, and overhead transparencies. While suitable commercially-developed instructional materials are in short supply, this shortage is being met by a trend toward locally-produced materials by the teacher preparation institutions. In some curriculum areas this trend is resulting in unnecessary duplication of effort, but until the new instructional media are more widely accepted and used by teacher educators, commercial producers will not find attractive the development of materials for our field. Paradoxically, it could well be that the dearth of commercial materials is the prime factor inhibiting acceptance among teacher educators.

Instructional Television. Our unpublished survey reveals that almost one in three teacher preparation institutions has television facilities that will be operable during the school year ahead. These are mostly closed circuit television installations concentrating on programming for directed observation originating from the campus laboratory school, for instruction in techniques of television utilization in the classroom, and for large-group instruction of lower division courses. Video tape recorders, particularly the lower-cost portable models, will be in use during the coming school year in almost one-in-

6

four teacher preparation institutions. In the professional education sequence, the video tape recorder is most often used to record and play back directed experiences in classroom observation, demonstration lessons by methods professors, demonstration lessons by student teachers, role-playing assignments and counseling interviews.

Programmed Instruction. Of the 352 commercially-available programs listed in the U. S. Office of Education-sponsored Programs, '63, not one was designed for the traditional content of the professional education sequence. Continuing surveys by the TEAM Project have discovered about 90 programs relating to the professional sequence being developed, revised, and used by individual faculty members concerned with this content area. Further, about one-fourth of responding institutions are offering courses about programmed instruction, and about one-third are teaching program writing as part of a teacher preparation course not primarily concerned with programmed instruction. The programs in use are typically concerned with educational methods, measurement and statistics, and psychological foundations.

While it is unimportant at this time to debate the merits of the programmed text versus the teaching machine, it is important to understand that the concept of programmed instruction has tremendous implications for education at all levels. For programming undergirds the theory of instructional systems, of individual differences and current research in auto-instruction, flexible scheduling, and non-graded schools. And it is reflected in the well-developed teacher's lesson plan. Programmed instruction and the video tape threaten to change the role of the teacher of teachers from a disseminator of limited information to a director of learning.

Multi-media Presentation Systems. As bourgeoning enrollments in higher education force upward the student-to-instructor ratio, facilities are being developed to allow the instructor to present the lecture-demonstration part of his course to large classes ranging in size from 150 to 600 students. Augmenting the instructor in this larger-than-life setting is the multi-media presentation system. This presentation system, programmed by the instructor from his lectern, permits through rear-screen projection the instantaneous use of large-screen television, motion pictures, slides, filmstrips, and pre-recorded audio tapes. Some systems permanently record the instructor's lecture and multi-media cues on tape for later use in multi-sectional courses in the absence of the instructor. Kinescope and video tape presentations offer this same capability.

Single Concept Films. The recent acceptance of the 8mm motion picture for small group and individual use has resulted in a rapidly growing interest in shorter educational films. These films, in continuous loop cartridges which simplify projector operation, develop a single concept to be learned in from two to five minutes. The films are inexpensive to purchase, less expensive to produce on your own campus. Syracuse University has incorporated this type of film in a self-instructional, automated audio visual laboratory course, and Arizona State University at Tempe has pioneered in production workshops in which classroom teachers learn the technique and produce their own single concept films.

Several teacher education institutions are using 8mm films to record the performances of student teachers, and rear-screen projectors are now available that will take continuous-loop cartridged sound films up to 28 minutes in length. The low cost and ease of operation features plus the creative capabilities of coordinated use with programmed instruction and auto-instruction promise great prominence for 8mm films in the future.

And I trust it is obvious to this seminar that if television is considered as a transmission medium for all other instructional media, whether to large groups, small group seminars, or independent study carrels, then televised instruction faces the greatest challenge and responsibility to learning of all the so-called new educational media.

Simulation. One other current use of the new media in teacher education needs mention here for it offers an alternative to the growing shortage of classrooms available for the traditional student teaching experience. Recently, a procedure for using simulation in the pre-service education of classroom teachers was created through a pilot program of research and development at the Teaching Research Laboratory of the Oregon State System of Higher Education by Dr. Bert Y. Kersh. A simulation facility was built utilizing multiple motion picture techniques and 60 critical incidents were filmed simulating a variety of sixth grade classroom situations. Following the student teacher's reaction (through role playing) to each critical incident, a short film clip was rear screen projected to reveal the consequences of the teacher's behavior. Kersh is presently simulating a ninth grade classroom with filmed critical incidents for use with prospective secondary level teachers.

These are the major new media developments in teacher education that hold promise for growth in the decade ahead. But we have problems...problems threatening to inhibit media innovations...problems concerned with money, manpower, machines, and materials. Let's look briefly at the summary reactions of some 600 university deans, college presidents, informed faculty members, and media specialists that responded to our questionnaire on technology in teacher education.

When asked to list the major factors restricting the acceptance of instructional technology in teacher education, the most frequent responses were: lack of money; lack of or poor quality of available materials; lack of time; lack of space, facilities, and equipment; tradition-bound, inflexible faculty; and lack of instructional technology leadership, in that order. When asked to list factors to cope with such problems as the population and knowledge explosions and the continuing objective of instructional improvement in the preparation of teachers, the respondents listed in order the following factors: more, better trained teachers of teachers; use of instructional technology; and adequate funds.

The final item on our questionnaire asked the respondent to predict media utilization trends through 1970, hardly half a decade hence. We found that utilization of the various new media will remain fairly constant with three exceptions. Programmed instruction will get greater emphasis, and the instructional programs will be developed by individual faculty members. Computer based instruction will receive an increasing emphasis in the across-the-board total college program. The greatest quantitive prediction is for the development and utilization of televised education at the higher education level. If Schramm can predict that every school district will be using television by 1970, the TEAM Project believes it can safely predict that almost every institution that prepares classroom teachers will also be using television by 1970.

In summary, I should note that current educational legislation and the impending Higher Education Act with its AV and TV amendment, will pump 50 times as much money into the educational economy in 1966 as it did in 1965. That should in part answer the problem of money. This same money is earmarked to do something about the manpower shortage, but there is a critical need for institutions of higher education to do something at once defining just what are the training requirements for the specialists and generalists working in instructional systems. And the machines already are far more sophisticated than many of the people responsible for using them will be a decade hence. The materials scarcity is perhaps our most critical problem. In teacher education the TEAM Project feels that materials development of professional quality may have to become the responsibility of the AV and TV production centers on the campuses of the large public and private universities. The experimentation with and evaluation of these materials can best be handled by what we call the "enlarged college," the old normal school or teachers college on the move. In these institutions, faculty and administration channels are open, and faculty members have not yet "arrived." There are few prima donnas, no national authorities with published textbooks behind them. We could all do well to look at the approach in use by the Inter-University Film Project at the University of Missouri, Kansas City. Or, closer to home, to the Classroom Recorded Episodes subcommittee of the Big Ten's CIC. It appears to me that the North Central Association of Colleges and Secondary Schools could function well as a leader and coordinator to solve the instructional materials shortage through inter-university cooperative projects.

Finally, let's keep our feet on the ground in the decade ahead, even though some of us must maintain a national image that our heads are in the clouds. In its continuous effort toward quality instruction, teacher education is moving toward a systems concept of instruction. But there are a number of very real factors that must determine what we put into the system, and what we can realistically hope to get out of the system. The TEAM Project has isolated seven such determinants: 1) the teacher; 2) the learner; 3) nature of the referent; 4) group composition; 5) group size; 6) teaching-learning environment; and 7) institutional commitment. The degree to which the instructional systems concept helps improve teacher education in the decade ahead will depend largely on the commitment of the individual institution to provide media facilities, resources, and resourceful people. A shiny new automobile is a thing to behold, but it cannot perform its unique function without fuel and a driver. Teacher education administrators are acquiring shiny new automobiles; they need our immediate help in developing more efficient fuels and better drivers.

Thank you.

APPENDIX E

EXHIBIT 1

PRELIMINARY QUESTIONNAIRE
January, 1964

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS 21, OHIO

DONALD G. EMERY
SHAKER HEIGHTS PUBLIC SCHOOLS

ROBERT L. FLEMING
YOUNGSTOWN, OHIO

ELIZABETH GOLTERMAN
ST. LOUIS PUBLIC SCHOOLS

RICHARD B. HULL
OHIO STATE UNIVERSITY

JACK McBRIDE
UNIVERSITY OF NEBRASKA

LAWRENCE E. McKUNE
MICHIGAN STATE UNIVERSITY

PROJECT STAFF

RICHARD B. HULL
DIRECTOR

DEAN C. CANNON
COORDINATOR

MARTHA HAUEISEN
SECRETARY

January 30, 1964

Dear Sir:

During the past several years the North Central Association, working with other accrediting agencies, has devoted an increasing amount of attention to the potentials of educational television in improving the quality of instruction.

The Subcommittee on Television, an arm of the Commission on Research and Service, has had this area under continuous review with the primary purpose of providing information which will assist administrators in making decisions about this new medium. Currently, as part of an NDEA Title VII contract with the U.S. Office of Education, the Subcommittee is conducting a census of educational television useage by NCA member institutions.

The enclosed questionnaire, officially approved by the Board of Directors of the North Central Association of Colleges and Secondary Schools, has been developed to help gather information which will be useful to NCA member institutions and the U.S. Office of Education.

We believe it will take no more than 15 minutes of your time to complete the questionnaire. If you can return it by February 15, we can process the information and report findings not only to the NCA Commission but to the U.S. Office of Education in sufficient time to affect important policy decisions.

Sincerely,

Richard B. Hull

Richard B. Hull
Chairman, TV Subcommittee

RBH/tw
Enc.

1963-64: Depth Seminars, Project Conducted under a Title VII Contract with the United States Office of Education

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NORTH CENTRAL ASSOCIATION OF COLLEGES
AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

NORTH CENTRAL ASSOCIATION
OF
COLLEGES AND SECONDARY SCHOOLS

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS 21, OHIO

Instructional Television Census

INSTRUCTIONS: Fill in the blanks below or check where indicated. If more than one response is necessary to fully answer a question, please make the necessary additions.

IDENTIFYING INFORMATION:

Name of institution: ____________________

Address: ____________________

Name and Title of reporting official: ____________________

1. How many instructional personnel (instructor rank and above) on the staff of your institution? ________

2. How many students enrolled by your institution? ________ Undergraduate; ________ Graduate; ________ Professional; ________ Extension credit courses; ________ Extension, non-credit; ________ GRAND TOTAL

3. Does your institution use televised lectures and/or other televised material as a part of its instructional program? ( ) Yes ( ) No

NOTE: If answer to #3 above is "No", skip to #18.

- -

4. In what year did your institution begin using television for instructional purposes? ________

5. For which of the following purposes did your institution initially begin using television:

( ) to enrich particular courses
( ) to add subjects not otherwise available to the curriculum
( ) to help alleviate a shortage of qualified teachers
( ) to help relieve congested classroom situations
( ) other (Please indicate) ____________________

6. Estimate the number of instructional personnel making use of television programs in their classrooms during the current academic year. ____________

7. Estimate the number of students who will receive SOME instruction by television during the current academic year. __________

8. In which of the following content areas are instructional television programs being presented to the students of your institution:

UNDERGRADUATE/GRADUATE
☐ Biological sciences
☐ Physical sciences
☐ Business
☐ Education
☐ History
☐ Radio and television
☐ Other social sciences
☐ English
☐ Foreign languages
☐ Other humanities
☐ Mathematics

PROFESSIONAL
☐ Dentistry
☐ Engineering
☐ Law
☐ Medicine
☐ Nursing
☐ Pharmacy
☐ Theology
☐ Veterinary Medicine
☐ Other (Please indicate) ____________

CONTINUING EDUC./EXTENSION
☐ Agricultural extension
☐ General extension
☐ Continuing education

9. How is televised instruction "sent" to classrooms of your institution:

☐ non-commercial stations owned by the institution
☐ cooperative projects with a nearby non-commercial station
☐ cooperative projects with a nearby commercial station
☐ closed circuit distribution system (microwave or coaxial cable)
☐ Midwest Program for Airborne Television Instruction (MPATI)
☐ other (Please indicate) ____

10. Does your institution own television production studios? ☐ Yes ☐ No

If "yes", check below the types of equipment available:

☐ monochrome (black & white) vidicon camera(s)
☐ color vidicon camera(s)
☐ monochrome (black & white) image orthicon camera(s)
☐ color image orthicon camera(s)
☐ "broadcast quality" video tape recorder
☐ "closed circuit quality" video tape recorder

11. At a given hour, how many classrooms are equipped to receive televised instruction?

____

12. How many television receivers are used for instructional purposes by your institution? ____________

13. In classrooms equipped to receive televised instruction, how does the program get to the individual receiver:

( ) indoor antenna on each set
( ) sets connected to a building master antenna
( ) sets connected to a coaxial cable

14. As a part of "total instructional expenses" for your institution, are there specific budgetary items for televised instruction? ( ) Yes ( ) No

If "yes", what are the bases used for computing such budgetary items:

( ) per hour operating cost
( ) per student enrolled basis
( ) other (Please indicate) ______________________________

15. From which of the following sources does your institution receive monies for instructional television programs or courses:

( ) federal funds
( ) state funds
( ) departmental budgets
( ) foundation funds
( ) other sources (Please indicate) ______________________________

16. Does instructional television serve any of the following purposes in your institution:

( ) enrichment resource (occasional addition to conventional course used at the instructor's option)
( ) supplemental resource (regular and systematic use, but partial content of the course presentation)
( ) total teaching (total content of course presentation)
( ) in-service training
( ) general (faculty meetings, orientation programs, commencement, etc.)
( ) other (Please indicate) ______________________________

17. What are the chief benefits which come from the use of television for instructional purposes at your institution:

( ) enlarges the range of student experiences
( ) better use of instructor time
( ) increases course content
( ) broadens curriculum offerings
( ) economic savings
( ) helps with the instruction of large numbers of students
( ) other (Please indicate) ______________________________

18. In your opinion, does your institution have a need for televised instruction?
( ) Yes ( ) No

If "yes", at what level does this need exist?

( ) Undergraduate-Graduate
( ) Professional
( ) Extension/Continuing Education
( ) Other (Please indicate) ____________________

19. If your institution has a need for instructional materials which can be best provided by television, on which of the following sources would your institution be most likely to rely:

( ) locally prepared programs or courses
( ) intra-state prepared programs or courses
( ) regionally prepared programs or courses
( ) nationally prepared programs or courses

20. If your plans include use of pre-recorded instructional television materials from library sources, which would best serve the needs of your institution:

( ) a national instructional television library
( ) a regional instructional television library
( ) a state instructional television library
( ) a combination of the above
( ) none of these (Please comment) ____________________

21. If televised courses within particular content areas can be obtained from an instructional television library, regional or national, serving your institution, would you be willing to support this library so that it can continue to operate?
( ) Yes ( ) No ( ) Comment ____________________

22. In the space below please indicate what you consider to be the problem areas in using television in education.

**NORTH CENTRAL ASSOCIATION OF COLLEGES
AND SECONDARY SCHOOLS**

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS 21, OHIO

DONALD G. EMERY
SHAKER HEIGHTS PUBLIC SCHOOLS

ROBERT L. FLEMING
YOUNGSTOWN, OHIO

ELIZABETH GOLTERMAN
ST. LOUIS PUBLIC SCHOOLS

RICHARD B. HULL
OHIO STATE UNIVERSITY

JACK McBRIDE
UNIVERSITY OF NEBRASKA

LAWRENCE E. McKUNE
MICHIGAN STATE UNIVERSITY

PROJECT STAFF

RICHARD B. HULL
DIRECTOR

DEAN C. CANNON
COORDINATOR

MARTHA HAUEISEN
SECRETARY

January 30, 1964

Dear Sir:

During the past several years the North Central Association, working with other accrediting agencies, has devoted an increasing amount of attention to the potentials of educational television in improving the quality of instruction.

The Subcommittee on Television, an arm of the Commission on Research and Service, has had this area under continuous review with the primary purpose of providing information which will assist administrators in making decisions about this new medium. Currently, as part of an NDEA Title VII contract with the U.S. Office of Education, the Subcommittee is conducting a census of educational television useage by NCA member institutions.

The enclosed questionnaire, officially approved by the Board of Directors of the North Central Association of Colleges and Secondary Schools, has been developed to help gather information which will be useful to NCA member institutions and the U.S. Office of Education.

We believe it will take no more than 15 minutes of your time to complete the questionnaire. If you can return it by February 15, we can process the information and report findings not only to the NCA Commission but to the U.S. Office of Education in sufficient time to affect important policy decisions.

Sincerely,

Richard B Hull

Richard B. Hull
Chairman, TV Subcommittee

RBH/tw
Enc.

P.S.: In the questionnaire, the term "administrative unit" is defined as follows--a geographic area which for specified school purposes is under the supervision or control of a single board of education and/or administrative officer.

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS 21, OHIO

NORTH CENTRAL ASSOCIATION
OF
COLLEGES AND SECONDARY SCHOOLS

Instructional Television Census

INSTRUCTIONS: Fill in the blanks below or check where indicated. If more than one response is necessary to fully answer a question, please make the necessary additions.

IDENTIFYING INFORMATION:

Name of administrative unit: ______________________________

Address: ______________________________

Name and title of reporting official: ______________________________

1. How many instructional personnel in your administrative unit:

_____ Kindergarten through Grade 6; _____ Grades 7 through 14

2. How many pupils enrolled in your administrative unit:

_____ Kindergarten through Grade 6; _____ Grades 7 through 14

3. Does your administrative unit use televised lessons as a part of its instructional program? ( ) Yes ( ) No

NOTE: If answer to #3 above is "No", skip to question #18.

- -

4. In what year did your administrative unit begin using television for instructional purposes? __________

5. For which of the following purposes did your administrative unit initially begin using television:

( ) to enrich the curriculum
( ) to add subjects not otherwise available to the curriculum
( ) to help alleviate a shortage of qualified teachers
( ) to reduce congested classroom situations
( ) other (Please indicate) ______________________________

6. Estimate the number of instructional personnel (teachers) making use of television programs in their classrooms during the current academic year. ________

7. Estimate the number of pupils who will receive SOME instruction by television during the current academic year. ________

8. In which of the following content areas are instructional television programs being presented to the pupils in your administrative unit:

ELEMENTARY
( ) Arithmetic
( ) Art
( ) Foreign Language
( ) General Science
( ) Health & Physical Ed.
( ) Music
( ) Reading
( ) Social Studies
( ) Other

SECONDARY
( ) Art/Music
( ) Commerce
( ) English/Speech
( ) Foreign Language
( ) Mathematics
( ) Health & Physical Ed.
( ) Safety/Driver Training
( ) Sciences (Physical & Life)
( ) Social Studies
( ) Other

ADULT
( ) Systematic instruction at home
( ) Systematic instruction in a classroom
( ) Other

9. How is televised instruction "sent" to classrooms of your administrative unit:

( ) non-commercial station owned by the administrative unit
( ) cooperative projects with a nearby non-commercial station
( ) cooperative projects with a nearby commercial station
( ) closed circuit distribution system
( ) Midwest Program for Airborne Television Instruction (MPATI)
( ) other (Please indicate) ________________________________

10. Does your administrative unit own television production studios? ( ) Yes ( ) No

If "yes", check below the types of equipment available:

( ) monochrome (black & white) vidicon camera(s)
( ) monochrome (black & white) image orthicon camera(s)
( ) color vidicon camera(s)
( ) color image orthicon camera(s)
( ) "broadcast quality" video tape recorder
( ) "closed circuit quality" video tape recorder

11. At a given hour, how many classrooms can receive televised lessons? ________

12. How many television receivers are housed in your administrative unit: ______

13. In rooms equipped to receive televised lessons, how does the program get to the individual receiver:

    ( ) indoor antenna on each set
    ( ) sets connected to a building master antenna
    ( ) sets connected to a coaxial cable

14. As a part of "total instructional expenses" for your administrative unit, are there specific budgetary items for televised instruction? ( ) Yes ( ) No

    If "yes", what are the bases for computing such budgetary items:

    ( ) per pupil units
    ( ) teacher units
    ( ) other basis (Please indicate) ______________________________

15. From which of the following sources does your administrative unit receive monies for instructional television programs or courses:

    ( ) federal funds
    ( ) state funds
    ( ) local funds
    ( ) foundation funds
    ( ) other sources (Please indicate) ______________________________

16. Does instructional television serve any of the following purposes in your administrative unit:

    ( ) enrichment resource (occasional addition to conventional course, used at the teacher's option)
    ( ) supplemental resource (regular and systematic use, but partial content of course presentation)
    ( ) total teaching (total content of course presentation)
    ( ) in-service training (resource materials, workshops, etc.)
    ( ) administrative reports to instructional staff
    ( ) none of the above

17. What are the chief benefits which come from the use of television for instructional purposes in your administrative unit:

    ( ) furnishes teaching specialists to assist classroom teachers
    ( ) enlarges the range of pupil experiences
    ( ) better use of teacher time
    ( ) increased course content
    ( ) broader curriculum offerings
    ( ) economic savings
    ( ) other (Please indicate) ______________________________

18. In your opinion, does your administrative unit have a need for televised lessons? ( ) Yes ( ) No ( ) Comment: ____________________

If "yes", at what grade level(s) does this need exist? ____________

If "yes", in what subject matter area(s)? ____________

19. If your administrative unit has a need for instructional materials which can be best provided by television, on which of the following sources would your unit most likely rely:

( ) intra-state prepared programs or courses
( ) regionally prepared programs or courses
( ) nationally prepared programs or courses
( ) other (Please indicate) ____________________

20. If your plans include use of pre-recorded instructional television materials from library sources, which would best serve the needs of your administrative unit:

( ) a national instructional television library
( ) a regional instructional television library
( ) a state instructional television library
( ) a combination of the above
( ) none of these (Please comment): ____________________

21. If televised courses within particular content areas can be obtained from an instructional television library, regional or national, serving your administrative unit, would you be willing to support this library so that it could continue to operate? ( ) Yes ( ) NO ( ) Comment: ____________________

22. In the space below please write what you consider to be the problem areas in using television in education.

EXHIBIT 2

CENSUS QUESTIONNAIRE
April, 1965

NORTH CENTRAL ASSOCIATION OF COLLEGES
AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS, OHIO 43221

MILTON W. BIERBAUM
MAPLEWOOD, MO.

DONALD G. EMERY
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ROBERT FLEMING
YOUNGSTOWN, O.

RICHARD B. HULL
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J. FRED MURPHY
INDIANAPOLIS, IND.

GEORGE PARKINSON
MILWAUKEE, WISC.

PROJECT STAFF

RICHARD B. HULL
DIRECTOR

DEAN C. CANNON
COORDINATOR

JAMES R. JORDAN
EDITOR

LEROY HULL
RESEARCH ASSOCIATE

MARTHA HAUEISEN
SECRETARY

April 30, 1965

Dear Sir:

A little over a year ago you receive a questionnaire similar to the one enclosed. At that time, you were asked a series of questions about the use of television in education. The results of this study were most gratifying.

The Subcommittee on Television has been asked to up-date the materials gained last year in order that it can continue to review instructional television and bring pertinent information to the attention of the Association through the Commission on Research and Service.

The enclosure, officially approved by the Board of Directors of the North Central Association, has been shortened and improved. It should take no more than 15 minutes to complete. Your prompt return will be appreciated. Through your cooperation, it will be possible to present information which will help your fellow administrators in making decisions about this new medium.

If possible, please complete and return the questionnaire by May 15th.

Sincerely,

Richard B Hull

Richard B. Hull
Chairman

RBH/dco
Encl.

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

Instructional Television Census
(Higher Education)

Instructions: Please fill in the blanks or check where indicated.

IDENTIFYING INFORMATION:

Name of Institution: ______________________________

Address: ______________________________

Name & Title of reporting Official: ______________________________

____

INSTITUTIONAL INFORMATION:

1. Is Institution:

1( ) Junior College
2( ) College or university offering Bachelor's degree ONLY
3( ) College or university offering Master's degree
4( ) College or university offering Specialist's degree or second professional degree
5( ) College or university offering Doctor's degree

2. Is Institution:

1( ) Community supported
2( ) Parochial
3( ) Private
4( ) State supported

3. How many full-time teachers (instructor rank and above) on staff

____

4. How many full-time students currently enrolled

____

5. Does your institution use television as a part of its instructional program (Including speech, education, and journalism laboratories)?

1( ) Yes
2( ) No

NOTE: If your answer to this question is "No" — STOP.

Please return questionnaire to:
SUBCOMMITTEE ON TELEVISION
2470 North Star Road
Columbus, Ohio 43221.

• •

• •

TELEVISION INFORMATION:

6. For approximately how many years has your institution been using television as a part of its instructional program?

____

7. In your opinion, which of the choices below is the most important reason for using television:

1( ) to enrich the curriculum
2( ) to add subjects not otherwise available to the curriculum
3( ) to help alleviate a shortage of qualified teachers
4( ) to reduce congested classroom situations
5( ) to handle larger enrollments
6( ) other (please comment) ______________________________

8. Approximately how many staff members are making use of television in their classrooms during the current academic year?

____

9. Approximately how many students are enrolled in classes which will use some television lessons during the current academic year?

____

10. In which of the following subject areas are television programs being used this year:

0 UNDERGRADUATE

1( ) Biological sciences
2( ) Physical sciences
3( ) Business
4( ) Education
5( ) History
6( ) Radio and television
7( ) English
8( ) Other social sciences
9( ) Foreign languages
10( ) Other humanities
11( ) Mathematics

3 GRADUATE

( ) Biological sciences
( ) Physical sciences
( ) Business
( ) Education
( ) History
( ) Radio and television
( ) English
( ) Other social sciences
( ) Foreign languages
( ) Other humanities
( ) Mathematics

8 PROFESSIONAL

1( ) Dentistry
2( ) Engineering
3( ) Law
4( ) Medicine
5( ) Nursing
6( ) Pharmacy
7( ) Veterinary Medicine
8( ) Theology

11. From what source or sources does your institution receive television programs:

( ) a non-commercial educational television station
( ) a commercial television station
( ) a closed circuit distribution system
( ) a 2,500 megacycle fixed service station
( ) Midwest Program for Airborne Television Instruction (MPATI)

12. How many television sets do you have at your institution?

____

13. How many classrooms can receive television programs at the same time?

____

14. Does your institution own television equipment OTHER THAN SETS?

1( ) Yes
2( ) No

If "Yes", check below the types of equipment available:

( ) Black and white (monochrome) vidicon camera(s)
( ) Black and white (monochrome) image orthicon camera(s)

( ) Color vidicon camera(s)
( ) Color image orthicon camera(s)

( ) "Broadcast quality" video tape recorder(s)
( ) "Closed circuit quality" video tape recorder(s)

15. In rooms equipped to receive television, how does the program get to the set:

0( ) by an antenna (like "rabbit ears") on each individual set
3( ) by connection to a "master antenna" (like in hotels and motels)
8( ) by direct connection to the television camera's coaxial cable

16. As a part of "operational expenses" for your institution, are there specific items for television?

1( ) Yes
2( ) No

If "Yes", which of the following is the basis for establishing the item:

0( ) per student enrolled
3( ) per hour of operation
8( ) per course
X( ) as needed

17. If your answer to #16 was "Yes", approximately what percentage of your money comes from each of the following sources:

____% - Federal funds
____% - State funds
____% - Tuition
____% - Foundation funds
____% - Miscellaneous (unclassified funds)

18. Rank the following according to either their importance or their use at your institution:

1 ( ) Television as an enrichment resource (occasional addition to conventional course materials, used at the option of the teacher)
2 ( ) Television as a supplemental resource (regular and systematic use in the classroom, but used to present only a portion of the course materials)
3 ( ) Television for total teaching (all of the course materials are presented by means of the television medium)
4 ( ) Television for in-service training (presentation of resource materials, used for workshops, etc.)
5 ( ) Television for administrative uses (faculty meetings, student orientations, commencements, etc.)

19. Of the following items, rank the three (3) most important to your institution:

1 ( ) Television enlarges the range of student experiences
2 ( ) Television permits better use of instructor time
3 ( ) Television enables the teaching staff to expand course content
4 ( ) Television broadens curriculum offerings
5 ( ) Television helps with the instruction of large numbers of students
6 ( ) Television permits an economic savings with regards to instructional costs

20. The items below describe several of the administrative problem areas encountered when initiating television. What three (3) items cause you the most concern now?

0 ( ) cost: concern for capital and operating funds
1 ( ) utilization: concern for how programs are being used
2 ( ) faculty resistance: concern that television will not be accepted as teaching tool
3 ( ) specialized personnel needed: concern over a need for a technically trained staff
4 ( ) curriculum continuity: concern that the televised materials will not meet needs
5 ( ) scheduling: concern for coordination of programs with schedule of classes and rooms
6 ( ) inter-institutional exchange: concern over acceptance of materials done elsewhere
7 ( ) impersonal-passive: concern that medium will destroy personalized lessons & feedback
8 ( ) lack of experience with medium: concern that experience is necessary for success
9 ( ) released time - teacher's rights - copyright: concern about ownership of programs
X ( ) administrative support: concern that other administrators will not give "full support" to decision that television is a tool that can help solve some problems.

NORTH CENTRAL ASSOCIATION OF COLLEGES
AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES:
2470 NORTH STAR ROAD
COLUMBUS, OHIO 43221

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LEROY HULL
RESEARCH ASSOCIATE

MARTHA HAUEISEN
SECRETARY

April 30, 1965

Dear Sir:

A little over a year ago you receive a questionnaire similar to the one enclosed. At that time, you were asked a series of questions about the use of television in education. The results of this study were most gratifying.

The Subcommittee on Television has been asked to up-date the materials gained last year in order that it can continue to review instructional television and bring pertinent information to the attention of the Association through the Commission on Research and Service.

The enclosure, officially approved by the Board of Directors of the North Central Association, has been shortened and improved. It should take no more than 15 minutes to complete. Your prompt return will be appreciated. Through your cooperation, it will be possible to present information which will help your fellow administrators in making decisions about this new medium.

If possible, please complete and return the questionnaire by May 15th.

Sincerely,

Richard B. Hull

Richard B. Hull
Chairman

RBH/dco
Encl.

NORTH CENTRAL ASSOCIATION

1963-65: Depth Seminars, Project Conducted under a Title VII Contract with the United States Office of Education

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

Instructional Television Census
(Secondary Schools)

Instructions: Please fill in the blanks or check where indicated.

IDENTIFYING INFORMATION:

Name of School: ______________________________

Address: ______________________________

Name & Title of reporting official: ______________________________

____

SCHOOL INFORMATION:

1. Is School:

1( ) Kindergarten through 12th grade
2( ) 7th Grade through 12th grade (Junior-Senior High School)
3( ) 9th Grade through 12th grade (Four-year High School)
4( ) 10th Grade through 12th grade (Three-year High School)

2. Is School:

1( ) parochial
2( ) private
3( ) public

3. How many teachers in your school?

____

4. How many pupils enrolled by your school?

____

5. Does your school use television as a part of its instructional program?

1( ) Yes
2( ) No

NOTE: If your answer to this question is "No" — STOP.

Please return questionnaire to:
SUBCOMMITTEE ON TELEVISION
2470 North Star Road
Columbus, Ohio 43221.

+ +
- -
+ +

TELEVISION INFORMATION:

6. For approximately how many years has your school been using television as a part of its instructional program?

____

7. In your opinion, which of the choices below is the most important reason for using television:

1( ) to enrich the curriculum
2( ) to add subjects not otherwise available to the curriculum
3( ) to help alleviate a shortage of qualified teachers
4( ) to reduce congested classroom situations
5( ) to handle larger enrollments
6( ) other (please comment) ______________________________

8. Approximately how many teachers are making use of television in their classrooms this year?

____

9. Approximately how many pupils will receive SOME instruction by television this year?

____

10. In which of the following subject areas are television programs being used at your school:

0 ELEMENTARY

1( ) Arithmetic
2( ) Art
3( ) Foreign Language
4( ) General Science
5( ) Health and/or Phy Ed
6( ) Music
7( ) Reading
8( ) Social Studies

3 SECONDARY

( ) Art and/or Music
( ) Commerce
( ) English and/or Speech
( ) Foreign Language
( ) Health and/or Phy Ed
( ) Safety and/or Driver Training
( ) Mathematics
( ) Sciences (physical and life)
( ) Social Studies

8 ADULT

1 ( ) Systematic lessons at home
3 ( ) Systematic lessons in the school

11. From what source or sources does your school receive television programs:

( ) a non-commercial educational television station
( ) a commercial television station
( ) a closed circuit television system
( ) a 2,500 megacycle fixed service station
( ) Midwest Program for Airborne Television Instruction (MPATI)

12. How many television sets do you have in your school?

____

13. How many classrooms can receive television programs at the same time?

____

14. Does your school own television equipment OTHER THAN SETS?

1( ) Yes
2( ) No

If "Yes", check below the types of equipment available:

( ) Black and white (monochrome) vidicon camera(s)
( ) Black and white (monochrome) image orthicon camera(s)

( ) "Broadcast quality" video tape recorder(s)
( ) "Closed circuit quality" video tape recorder(s)

15. In rooms equipped to receive television, how does the program get to the set:

0( ) by an antenna (like "rabbit ears") on each individual set
3( ) by connection to a "master antenna" (like in hotels and motels)
8( ) by direct connection to the television camera's coaxial cable

16. As a part of "operational expenses" for your school, are their specific items for television?

1( ) Yes
2( ) No

If "Yes", which of the following is the basis for establishing the items

0( ) per pupil
3( ) per teacher
8( ) as needed

17. If your answer to #16 was "Yes", approximately what percentage of your money comes from each of the following sources:

____% - Federal funds
____% - State funds
____% - Local funds
____% - Tuition
____% - Foundation funds (PTA & gifts, etc.)
____% - Miscellaneous (unclassified) funds

18. Rank the following according to either their importance or their use in your school:

1( ) Television as an enrichment resource (occasional addition to conventional course materials, used at the option of the teacher)
2( ) Television as a supplemental resource (regular and systematic use in the classroom, but used to present only a portion of the course materials)
3( ) Television for total teaching (all of the course materials are presented by means of the television medium)
4( ) Television for in-service training (presentation of resource materials, used for workshops, etc.)
5( ) Television for administrative uses (teacher's meetings, superintendent's reports to the teaching staff, announcements, etc.)

19. Of the following items, rank the three (3) most important to your school:

1( ) Television furnishes teaching specialists to assist classroom teachers
2( ) Television enlarges the range of pupil experiences and exposure
3( ) Television permits better use of a teacher's time
4( ) Television increases subject-matter content
5( ) Television permits a broadening of the curriculum
6( ) Television permits an economic savings with regards to instructional costs

20. The items below describe several of the administrative problem areas encountered when initiating television. Which three (3) items cause you the most concern now?

1( ) Scheduling
2( ) Cost
3( ) Reception difficulties
4( ) Curriculum continuity and/or articulation
5( ) Utilization of television programs
6( ) Specialized personnel required
7( ) Teachers are resistive to using television
8( ) "Quality" of the televised lesson is questionable, doesn't meet local needs
9( ) Television lessons are inflexible and impersonal

EXHIBIT 3

PROPOSED QUESTIONNAIRE

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES
2470 NORTH STAR ROAD
COLUMBUS, OHIO 43221

MILTON W. BIERBAUM
MAPLEWOOD, MO.

DONALD G. EMERY
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LINCOLN, NEBR.

CHARLES McINTYRE
URBANA, ILL.

LAWRENCE E. McKUNE
EAST LANSING, MICH.

J. FRED MURPHY
INDIANAPOLIS, IND.

GEORGE PARKINSON
MILWAUKEE, WISC.

Dear Sir:

Attached is the revised data card for the 1965-66 Instructional Television Census. In order that your institution be included in the current tabulation, please complete and mail card, affixing a five cent stamp, on or before: ____________________.

The census, officially approved by the Board of Directors of the North Central Association of Colleges and Secondary Schools, has been developed to gather information which will help your fellow administrators in making decisions about television as a medium of instruction. Additionally, this official enumeration of the uses of television in the region will provide data to the Subcommittee with regard to those areas of televised instruction requiring research and deserving presentation at the NCA Annual Meeting.

Thank you for your cooperation and participation.

Sincerely yours,

Richard B. Hull
Chairman, Subcommittee on
Television

Enc.

PROJECT STAFF

RICHARD B. HULL
DIRECTOR

DEAN C. CANNON
COORDINATOR

JAMES R. JORDAN
EDITOR

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NORTH CENTRAL ASSOCIATION INSTRUCTIONAL TELEVISION CENSUS 1965-66

IDENTIFYING INFORMATION Type of institution: ( ) Secondary School
( ) College or University

Name of Institution: ______________________________

City: ____________________ State: ____________

Name of Reporting Official: ____________________ Title: ____________

INSTITUTIONAL INFORMATION Type of Support: ( ) Public
( ) Private

Number of Personnel: ________ Students
________ Teachers

Type of Organization:

Secondary Schools

( ) 8 - 4
( ) 6 - 6
( ) 6 - 3 - 3
( ) Other

Colleges & Universities (Check highest degree granted)

( ) Associate Degree (Junior College)
( ) Bachelor's Degree ONLY
( ) Master's Degree
( ) Specialist's Degree
( ) Doctor's Degree

Does your institution use television for instruction (including laboratories)? ( ) Yes ( ) No.

SUBCOMMITTEE ON TELEVISION
North Central Association of
Colleges and Secondary Schools
2470 North Star Road
Columbus, Ohio 43221

NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

SUBCOMMITTEE ON TELEVISION
OF THE COMMISSION ON RESEARCH
AND SERVICE

PROJECT OFFICES
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GEORGE PARKINSON
MILWAUKEE, WISC.

Dear

You recently completed and returned the 1965-66 Instructional Television Census card, indicating that your institution is using television. May we now request some further information from you regarding your institution's use of television?

On the attached questionnaire, please fill in the blanks or check where indicated. We deem your experiences most valuable and hope that you will have the few minutes necessary to complete this portion of the census. May we ask that you forward your responses by: ______________________.

Sincerely yours,

Richard B. Hull
Chairman, Subcommittee on
Television

Enc.

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1963-65: Depth Seminars, Project Conducted under a Title VII Contract with the United States Office of Education

NORTH CENTRAL ASSOCIATION INSTRUCTIONAL TELEVISION CENSUS 1965-66

IDENTIFYING INFORMATION

Type of Institution: ☐ Secondary School
☐ College or University

Name of Institution: ____________________

City: ____________________ State: __________

Name of Reporting Official: ____________________

Title: ____________________

TELEVISION INFORMATION

1. For approximately how many years has your institution been using television?

____

2. Approximately how many teachers are making use of television in their classrooms this year?

____

3A. FOR SECONDARY SCHOOL RESPONDENTS

Approximately how many students are receiving SOME instruction by television this year?

____

3B. FOR COLLEGE AND UNIVERSITY RESPONDENTS

Approximately how many course enrollments are served by instructional television?

____

4. How many television sets does your institution have?

____

5. How many classrooms can receive television programs simultaneously?

____

6. Does your institution own television equipment OTHER THAN SETS?

☐ Yes
☐ No

If "yes", check below the types of equipment available:

☐ Vidicon camera(s).
☐ Image orthicon camera(s).

☐ "Broadcast quality" video tape recorder (transverse scan).
☐ "Closed circuit quality" video tape recorder (helical scan).

7. In rooms equipped to receive television, how does the program get to the set:

☐ by an antenna on each individual set (like "rabbit ears")
☐ by connection to a "master antenna" (like in hotels and motels)
☐ by direct connection to the television camera's coaxial cable.

8A. FOR SECONDARY SCHOOL RESPONDENTS

In which of the following subject-matter areas are television programs being used this year?

Elementary

- ☐ Arithmetic
- ☐ Art
- ☐ Foreign Languages
- ☐ General Science
- ☐ Health and/or Physical Education
- ☐ Music
- ☐ Reading
- ☐ Social Studies

Secondary

- ☐ Art and/or Music
- ☐ Commerce
- ☐ Foreign Languages
- ☐ Health and/or Physical Education
- ☐ Language Arts
- ☐ Literature
- ☐ Mathematics
- ☐ Safety and/or Driver Training
- ☐ Sciences (physical and life)
- ☐ Social Studies

Adult

- ☐ Systematic lessons at home
- ☐ Systematic lessons in classrooms

8B. FOR COLLEGE AND UNIVERSITY RESPONDENTS

Undergraduate

- ☐ Agriculture and Home Economics
- ☐ Biological Sciences
- ☐ Business
- ☐ Education
- ☐ English
- ☐ Foreign Languages
- ☐ Health & Physical Education
- ☐ History
- ☐ Mathematics
- ☐ Other Humanities
- ☐ Physical Sciences
- ☐ Radio and Television
- ☐ Social Sciences

Graduate

- ☐ Agriculture and Home Economics
- ☐ Biological Sciences
- ☐ Business
- ☐ Education
- ☐ English
- ☐ Foreign Languages
- ☐ Health & Physical Education
- ☐ History
- ☐ Mathematics
- ☐ Other Humanities
- ☐ Physical Sciences
- ☐ Radio and Television
- ☐ Social Sciences

Professional

- ☐ Dentistry
- ☐ Engineering
- ☐ Law
- ☐ Medicine
- ☐ Nursing
- ☐ Pharmacy
- ☐ Theology
- ☐ Veterinary Medicine

9. In your opinion, what is the most important reason for using television at your institution?

____

____

____

10. The items below, divided according to origination and reception, describe several of the administrative problems encountered when using television. Which ones apply at your institution?

Origination

- ☐ COST - capital and operating funds are inadequate
- ☐ CURRICULUM CONTINUITY - televised materials will not meet needs
- ☐ SPECIALIZED PERSONNEL NEEDED - need for or unavailability of trained staff
- ☐ LACK OF EXPERIENCE WITH THE MEDIUM - experience is necessary for success
- ☐ RELEASED TIME; TEACHER'S RIGHTS; COPYRIGHT - ownership of programs, royalities, etc.
- ☐ ADMINISTRATIVE SUPPORT - supervisory administrators will not give "full support" to decision that television is a tool that can help solve some local problems

Reception

- ☐ COST - capital and operating funds are inadequate
- ☐ UTILIZATION - how programs are being used
- ☐ RESISTANCE - television will not be accepted as a teaching tool
- ☐ CURRICULUM CONTINUITY - televised materials will not meet local needs
- ☐ SCHEDULING - coordination of programs with schedule of classes, teachers and rooms
- ☐ INSTITUTIONAL EXCHANGE - materials prepared elsewhere will not be accepted
- ☐ IMPERSONAL-PASSIVE - medium destroys personalized lessons, feedback and interaction
- ☐ ADMINISTRATIVE SUPPORT - supervisory administrators will not give "full support" to decision that television is a tool that can help solve some local problems